

1 History of the ISZS

In January 2004, under the impetus of John Buckeridge, Francis Dov Por and Zhibin Zhang, an initiative to establish an International Society of Zoological Sciences (ISZS) was endorsed at the General Assembly of the International Union of Biological Sciences (IUBS). Later, in August 2004, the XIX International Congress of Zoology (ICZ) was held in Beijing and the ISZS was established.

The constituent bodies of the Society are: the General Assembly (GA), the Executive Committee, and the Secretariat. At the XIX ICZ, also the first ISZS GA, it was decided that the permanent Secretariat would be located in Beijing.

According to the ISZS Statutes, the mission of the ISZS is:

“To unite individual scholars and educators with national and professional organizations to promote an integrative study of animal organisms. It will promote co-ordination, collaboration and co-operation between different specialized fields of zoological sciences, involving both recent and extinct animal taxa. It will strive to attain a rational and ethically balanced relationship between humanity and nature.”

The main activity of the ISZS is to organize the ICZ (held every four years) as the pre-eminent forum for exchange between zoologists. During each ICZ, the ISZS will have its GA to review achievements, discuss issues in zoological research over the previous four years, recommend future development and trends of zoological

research, identify priority activities and elect EC members and other officers of the ISZS.

The responsibilities of the Executive Committee are that it shall not only implement policy and conduct business of the society, subject to approval by committee and General Assembly, but also ensure the continuity of the ISZS during the interregnum between congresses.

The major duty of the Secretariat is to be responsible for routine maintenance of the ISZS. This includes running the ISZS website (www.globalzoology.org), sending electronic newsletters, publishing the international journal of zoological sciences (*Integrative Zoology*), implementing membership services, organizing special symposia, networking international zoological data and launching international programs for joint research, as well as public education for young zoologists.

The first international organization that covers all branches of zoological sciences, established in 2004



2 Major Events and Progress from 2008 to 2012

2.1 XX ICZ

The XX ICZ was held in Paris, France, 25 to 29 August 2008, and was a huge success. Over 450 researchers from 30 countries attended.



Some attendees at XX ICZ in Paris

The University of Pierre and Marie Curie, University Paris-Sud and the Museum National d'Histoire Naturelle hosted the Congress.

Zoological congresses first began in 1889 under the impetus of the Societe de Zoologique France, so it was a special occasion to see the Congress return to its birthplace.

The Congress was divided into a number of symposia, plenary sessions and opportunities for poster display. Symposia topics included everything from global climate change to venomous animals, from taxonomy to evolution.

This Congress took place as the world faced global crisis to its biodiversity and climate change. Problems on this scale require global perspectives and the cooperation of people with knowledge and expertise in these areas from around the world.

The new ICZ is a way to reunite different zoological sub-disciplines while providing researchers from around the globe an opportunity to share ideas on animal organisms.

At the XX ICZ, a new ISZS EC members and officers were elected and it was decided that the 21st ICZ would be held in Haifa, Israel in 2012.



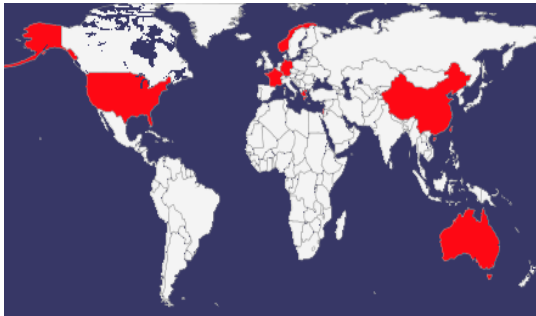
Some ISZS EC members at XX ICZ in Paris

The XX ICZ in Paris, France was a huge success

2.2 Executive Committee Meetings

Three Executive Committee meetings were held in China, in Beijing (2009), Kunming (2010) and Suzhou (2012). The Executive Committee members during this time were Jean-Marc Jallon (President, France) Zhibin Zhang (Vice-President, China), Abraham Haim (Vice-President, Israel), and members Edwin L. Cooper (USA), Rosa Polymeni (Greece), Nils Chr. Stenseth (Norway), and Juergen Heinze (Germany). Presidents

Emeritus are John Buckeridge (Australia) and Francis Dov Por (Israel).



The countries of the ISZS EC members

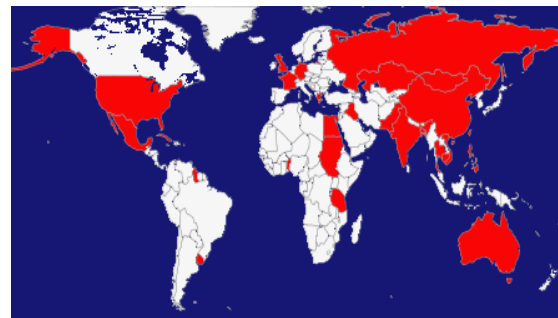
Several issues were consistently discussed across all meetings of the Executive: in particular the hosting of the next ICZ in Israel, *Integrative Zoology*, the structure of ISZS membership and the international research program. Minutes from these meetings are found the ISZS website.

Issues consistently discussed across all EC meetings: hosting of ICZ, Integrative Zoology, structure of ISZS membership; and international research program

2.3 Membership

The Secretariat spent much time and effort, utilizing various resources, to get a countable result on its membership

development. According to the statutes of the ISZS, membership of the ISZS will be as individuals and organizations (the latter being institutional membership). As of 30 June 2012, there were 100 corporate members from 26 countries, encompassing over 30000 zoologists, and 933 individual members from 58 countries. At the beginning of ISZS in 2004, there were only four corporate member and 86 individual members. In 2008, there were 35 and 259, respectively.



Locations of institutional members



Countries of individual members

To promote the ISZS, the Secretariat undertook a variety of actions. Those included promoting *Integrative Zoology* at various meetings, increasing ISZS impact through the executive member's networks, establishing email connections with those who attend the ICZ, ensuring a visible presence at international meetings and conferences and with other relevant international societies and organizations.

2.4 The ISZS Official Journal *Integrative Zoology* (INZ)

INZ is an SCI indexed journal with an Impact Factor of 1.2 in 2011

Soon after the establishment of the ISZS, the Secretariat started to prepare for the publication of the society's official journal under the leadership of Zhibin Zhang and John Buckeridge. At the end of 2005, the Secretariat signed a contract with the publisher, Wiley-Blackwell, and, in March 2006, ISZS formally launched the journal with the name *Integrative Zoology*. To date, 26 issues of the journal have been published.

When Wiley-Blackwell delivered the annual report for 2011 to the Secretariat on the performance of *Integrative Zoology* (for the complete report, see Attachment B). Of note were the following achievements:

Circulation and reach

- *Integrative Zoology* achieved an overall renewal rate of 135%, compared with an average renewal rate of 95% for the Life Sciences
- *Integrative Zoology* is now available in 3,077 institutions in the developing world

Usage

- Full text download for *Integrative Zoology* increased from 15,894 in 2010 to 17,838 in 2011, a rise of 12%

Impact Factor and ISI ranking

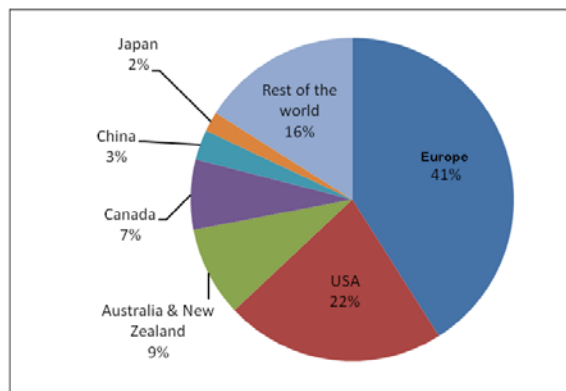
- *Integrative Zoology*'s first IF for 2010 was 1.000; the IF for 2011 is 1.208, ranking top 45% amongst the zoological journals in JCR.

Financial

- Total revenue to *Integrative Zoology* in 2011 was AUD28,711 versus AUD 14,857 in 2010

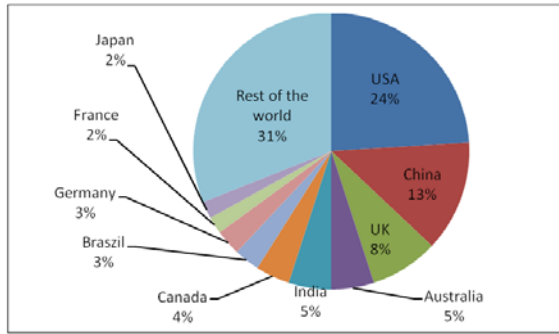
Furthermore, these achievements took place against a background of significant change the global economic environment and in scholarly publishing.

When it comes to the distribution of people accessing downloads, statistics from Wiley-Blackwell show that the top countries were Europe (41%), USA (22%), Australia & New Zealand (9%), Canada (7%), China (3%) and Japan (2%). The rest of the world accounted for 16%.



*Distribution of people accessing downloads
(Source: Wiley-Blackwell 2011)*

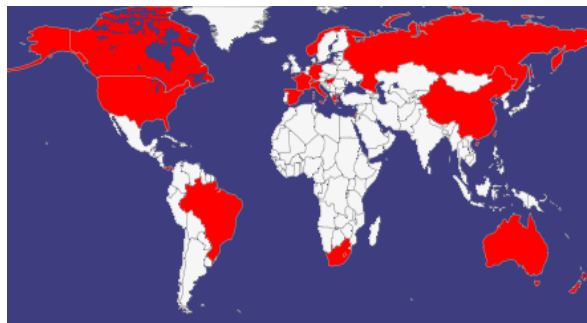
As for the top online traffic for 2011, the top 10 were USA (24%), China (13%), UK (8%), Australia (5%), India (5%), Canada (4%), Germany (3%), Brazil (3%), France (2%) and Japan (2%). The rest of the world accounted for the last 31%.



INZ online traffic for 2011 (Source: Wiley-Blackwell 2011)

In 2011, *Integrative Zoology* was formally registered with the Chinese General Administration of Press and Publication and got permission to publish publicly, not only internationally online, but printed in China as well.

In the same year, the journal renewed its editorial committee board. Currently, there are 59 members from 19 countries on the board. For detailed information, please see Attachment B.



Locations of INZ editorial board members

2.5 Website www.globalzoology.org

The Secretariat commenced a review and survey of its online environment in June 2008. Findings from the survey indicated that the website is easy to use for members and the awareness of the website was high amongst respondents.

Importantly, *Integrative Zoology* has been an important mechanism for raising awareness of the website and the website is also an important avenue for people accessing the journal. This relationship fostered a positive effect and shows how connected the journal and the society are. The number of the visits to the website (www.globalzoology.org) amounted to 220,000 in 2011, accounting for a 30% increase compared with the previous year.

Findings from the survey indicated that the website is easy to use and the awareness of the website was high.

2.6 Symposia and International Meetings

2.6.1 The 3rd International Symposium of Integrative Zoology (ISIZ)

The 3rd ISIZ was held at the Olympic Village Science Park in Beijing from 8 to 10 July 2009 with the support of ISZS, IUBS and the United Nations Educational Scientific and Cultural Organization (UNESCO). In addition, the symposium was backed by the China Zoological Society; Institute of Zoology, CAS; Bureau of International Cooperation, CAS and Department of International Affairs, CAST and it was chaired by Zhibin Zhang, Vice President, ISZS.

Over 130 researchers from 22 countries attended the symposium. Those included Jean-Marc Jallon (President, ISZS and Vice

President, IUBS), Motonori Hoshi (Past-President, IUBS), Jeffrey McNeely (Chief Scientist, International Union for Conservation of Nature) and Abraham Haim (Vice President, ISZS). Over 80 attendees delivered academic speeches over the course of the symposium, covering topics including climate change, marine, amphibians, biodiversity, species invasion and infectious diseases.

The symposium was a formal event under the IUBS *Darwin 200* Program to celebrate the life and work of Charles Darwin, who was born on 12 February 1809. *Darwin 200* symposia were also held in Christchurch, New Zealand; Venice, Italy; Maldonado, Uruguay; San Jose, Costa Rica; and Cape Town, Republic of South Africa.

High-level Chinese officials who attended the opening ceremony included Yiyu Chen (President, National Natural Science Foundation of China), Jiayang Li (Vice President, CAS) and Congbin Fu (Vice President, CAST).

Representatives from the Chinese Ministry of Environment Protection, State Forestry Administration (SFA), China, Ministry of Science and Technology (MOST), CAS, CAST and the Costa Rica and US Embassies in Beijing were also present during the opening ceremony.

The 3rd ISIZ: a formal event under the IUBS Darwin 200 Program to celebrate the life and work of Charles Darwin



A Statue of Darwin, also a gift from ISZS and IUBS, was unveiled for China National Museum of Zoology



Group photo of the attendees at the 3rd ISIZ

2.6.2 The 4th ISIZ

The 4th ISIZ was held in Kunming, capital city of Yunnan province in southwestern China, from 4 to 6 December 2010.

The symposium was organized by the ISZS; IUBS; Xishuangbanna Tropical Botanical Garden, CAS; Institute of Zoology, CAS; Kunming Institute of Zoology, CAS; China Zoological Society and China Committee for International Union of Biological Sciences (CCIUBS).

It was supported by the Bureau of Life Sciences and Biotechnology, CAS; Bureau of International Cooperation, CAS; Department of Learned Societies Affairs,

CAST; Department of International Affairs, CAST; Department of Life Science, National Natural Science Foundation of China (NSFC); Bureau of International Cooperation, NSFC; Department of Basic Research and Department of International Cooperation, MOST China.

Over 120 researchers from 16 countries attended the symposium. Those included Dr. Jean-Marc Jallon (President, ISZS and Secretary General, IUBS), Dr. Abraham Haim (Vice President, ISZS), Dr. Nathalie Fompromix (Executive Director, IUBS), Dr. Juergen Heinze (Member of Executive Committee, ISZS) and Drs. Nils Stenseth, Yury Dgebuadze and Hiroyuki Takeda (Members of Executive Committee, IUBS). Dr. Zhibin Zhang, Vice President of both IUBS and ISZS, opened and chaired the symposium.

Also, the year of 2010 was set by the United Nations as a Year of Biodiversity. As a result, there was a special session to note the year after the opening ceremony. Drs. Jean-Marc Jallon (France), Motonori Hoshi (Japan),

Valery Neronov (Russia) and Yaping Zhang (China) delivered plenary lectures at the session to memorialize the UN Year of Biodiversity.

Representatives from the SFA, MOST, CAS and CAST were also present at the opening ceremony.

The 4th ISIZ: an addition to the United Nation's Year of Biodiversity

2.6.3 International Workshop on Wildlife-borne Diseases Control and Management in Asia-Pacific Region

In August 2011, the ISZS organized an international workshop on Wildlife-borne Diseases Control and Management in the



Some photos at the 4th ISIZ

Asia-Pacific Region, in cooperation with the Bureau of Life Sciences and Biotechnology, CAS; the Department of Wildlife Conservation and the Natural Reserve Management, SFA; and Wildlife Services, Animal and Plant Health Inspection Service, the United States Department of Agriculture (USDA). Over 50 scientists and managers from 13 countries and regions around the Asia-Pacific rim attended the workshop.



Group photo of the workshop

2.6.4 Sino-Russian Symposium on Amur Tiger Conservation

In October 2011, the ISZS held a Sino-Russian Symposium on Amur Tiger Conservation in Hunchun, Jilin, China. 21 scientists from Russia and 45 from China attended the meeting. 29 scientists and specialists delivered speeches about their work and research on the ecology, behavior, genomics and diseases of Amur tiger, an endangered species in this cross-border region in Asia.

Investigation found the number of Amur tigers is less than 20 individuals in China



Group photo of the symposium



Some attendees of the symposium

2.6.5 31st IUBS GA and Conference of Biological Sciences and Bioindustry

The 31st IUBS GA and Conference of Biological Sciences and Bioindustry was held 5 to 9 July 2012 in Suzhou, China. The co-hosts were the IUBS; Bureau of Life Sciences and Biotechnology, CAS; the Bureau of International Cooperation, CAS and the Department of International Affairs, CAST.

The organizers of the GA and Conference were IUBS; CCIUBS, ISZS, Institute of Zoology, CAS; Institute of Botany, CAS; Institute of Genetics and Developmental Biology, CAS and the People's Government of Wuzhong District, Suzhou, China.

The IUBS was founded in 1919 and it is a non-governmental, non-profit organization that serves as an umbrella organization for a



Some photos of the IUBS GA and Conference

large number of scientific organizations. Currently, there are 29 ordinary members and 80 scientific members. The GA convenes every three years where decisions on the priorities of the IUBS are made, recommendations to the scientific committee are put forward and elections of executive committee (EC) members and administrative officers are held.

The theme of the conference was “Promoting Biological Sciences for a Better Life.” More than 400 participants attended the GA and the Scientific Sessions. Among them were 19 representatives of IUBS National Members and 15 representatives of IUBS Scientific Members.

On the first day, 4 speakers gave plenary lectures. As many as 15 Scientific Sessions were organized on: Bio-Industry, Nanobiology, Gasotransmitters in Biology, Mutualism and Bio-Security, Biological Consequences of Global Change (BCGC) and integrated Climate Change (iCCB),

Paleontology and Evolution, Biocomputation, Wildlife Diseases, Systems and Synthetic Biology of Industrial Microorganisms, BioEthics, IUBS BioEd 2012, Genomics & Evolution, Protected Areas (PA) and Conservation, Biodiversity and Conservation Biology and Access & Benefit Sharing of Genetic Resources and Associated with Traditional Knowledge. 167 speakers gave scientific presentations during the General Assembly and 57 of them were sponsored by IUBS.

***Theme of the
conference in
Suzhou:
“Promoting
Biological Sciences
for a Better Life”***

Marvalee Wake received the first IUBS Award in recognition of her dedicated and meritorious contribution to the Union and to biological sciences.

Young Scientists were invited by IUBS to attend the General Assembly and 7 of them received a Young Scientist Award from IUBS. 3 received the *Integrative Zoology* Exceptional Speaker award.

Reports on finances, management and scientific programs were presented, discussed and submitted to votes of IUBS Members. *Ad hoc* Committees were appointed to work on IUBS matters (statutes, programs, finances and other matters of business). New statutes and by-laws were approved.

2.7 Training and Education

2.7.1 International Training Course on Integrative Zoology

In July 2009, the ISZS organized an international training course on integrative zoology in Beijing. Rosa Polymeni, Professor at the Department of Biology, University of Athens, Greece; Jeffrey A. McNeely, Chief Scientist, International Union for Conservation of Nature (IUCN); Motonori Hoshi, Professor at the Open University of Japan; Alain Roques, Professor from the French National Institute for Agricultural Research; Cynthia Carey, Professor from the University of Colorado, USA; and Chang-Hung Chou, Professor from the China Medical University, Taiwan, China, delivered lectures. Over 40 students, researchers and scientists attended the training course.



Lecturing at the training course



Discussion during the training course

2.7.2 International Training Workshop on "Climate Change and Biosphere Reserves"

In March 2011, the ISZS organized an international training workshop on "Climate Change and Biosphere Reserves" in cooperation with the Chinese National Committee for MAB Programme. 17 representatives from 12 biosphere reserves in China and 6 experts from the ISZS and CCIUBS, Ms. Sarah Quig from the Canadian Biosphere Reserves Association, and more than other 30 people attended the workshop.

During the workshop, representatives from biosphere reserves in China and Ms. Quig also had the opportunity to discuss differences of biosphere reserves management in different countries and regions



Left: Group photo of the attendees; Right: Lecturing at the training workshop

2.7.3 International Training Course: New Trends and Methodology in Animal Ecology and Conservation Biology

In August 2011, the ISZS organized an International Training Course: New Trends and Methodology in Animal Ecology and Conservation Biology at the Institute of Zoology, CAS, with support from the International Cooperation Bureau, CAS, in Beijing, China. More than 100 scholars from more than 30 countries came and attended the course.

The training sessions aimed to promote new theories, changes, and developments in methodology of animal ecology, along with promoting new technologies in the field of conservation biology, enhance the overall academic understanding and innovation of animal ecology and conservation biology, facilitate communication between animal ecologists and conservationists from developing countries and offer a platform for face-to-face communication with leading scientists. Over 20 international biology and conservation biology scientists delivered lectures.



Some photos of the training course

Feedback demonstrated that, through these courses, participants learned new theories, techniques and methodologies for animal ecology and conservation biology, as well as gained an understanding of cutting edge trends in research on animal ecology and conservation biology.

Through these courses, participants learned new theories, techniques and methodologies

3 International Scientific Research Program

Program Leader:

Zhibin Zhang (zhangzb@ioz.ac.cn)

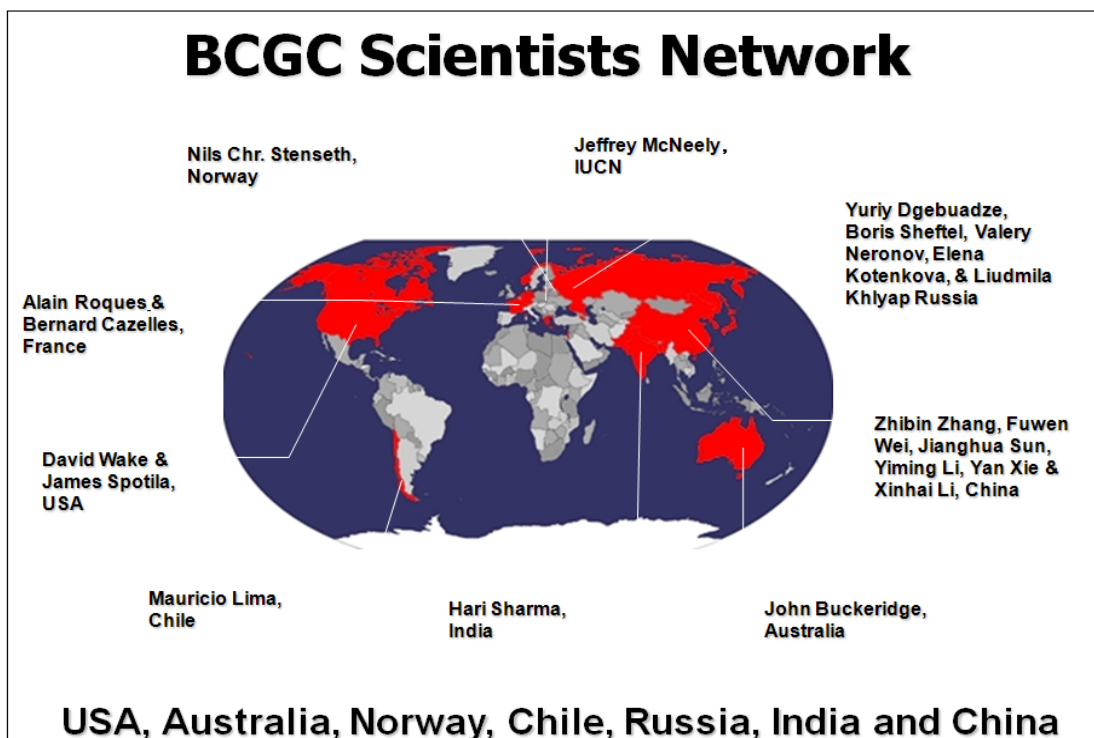
***BCGC Program ,
considered the core
of the IUBS
scientific programs***

Program committee members:

John Buckeridge (Australia), Nils Stenseth (Norway), Yury Dgebuadze (Russia), Alain Roques (France), Hari Sharma (India), David Wake (USA), Fuwen Wei, Jianghua Sun, Yan Xie, Xinhai Li (China), among others.

3.1 Background

Global change is now one of the most discussed topics in the world. Indeed, our earth is facing great challenges, such as global warming and human disturbance.



Understanding the impact of global change is extremely important for the sustainable development of human society. Unfortunately, the biological consequences of global change have been largely ignored. There is an urgent need to strengthen research on the biological consequences of global change.

Due to these circumstances, in 2008, the ISZS initiated an international research program called Biological Consequences of Global Change (BCGC). It was first supported by CAS. In 2009, BCGC was adopted by the IUBS as a new international research program. In July 2012, the BCGC Program was evaluated highly at IUBS and is considered the core of the IUBS scientific programs. Currently, there are over 20 scientists from Australia, Chile, China, France, India, Norway, Russia, and the USA in the program.

Focus

The focus of the BCGC program is to organize a diverse group of international experts, with expertise in many scientific disciplines, in order to develop an understanding of the biological consequences and the mechanisms on biological structures, endangered species and biological disasters under both global climate change and human activities.

Questions addressed by the project:

- Outbreaks of biological disasters, such as disease or pest outbreaks
- Biological invasion of alien species
- Abundance and range shifts of endangered species
- Community structure and biodiversity of different ecosystems
- Nonlinearity and interactions of biological populations

Goals:

- Promote understanding of BCGC and improve the management of our Earth
- Promote international collaborations
- Promote the influence and leadership of the BCGC program, ISZS and IUBS

3.2 Major Achievements

Scientists in the program found that BCGC may be positive or negative, depending on region and species.

***BCGC may be
positive or negative
depending on region
and species***

For example, for the last 20 years, the population of leatherback turtle (*Dermochelys coriacea* Vandelli, 1761), the largest sea turtle inhabiting all oceans except the Arctic and Antarctic, has been in steep decline due to human activity and climate change driven effects on reproductive success. Data collected from 1988 to 2010 on the reproductive ecology of this species on Playa Grande, Guanacaste, Costa Rica show that the number of turtles declined exponentially due to an almost total loss of eggs to humans and gill net fisheries in the Equatorial and South Pacific (J. Spotila *et al.* 2010). In northeastern China, investigation found that, with the increase of human activity, the number of Amur tigers, an endangered species in the region, is currently less than 20 individuals. Moreover, quite a number of them disperse from the neighbouring Russian regions (Y. Xie 2011). A continuous study of the Hubei golden snub-nosed monkey, an endangered endemic species in central-eastern China, shows that

in 2008 the average species group size decreased from 270 individuals to 197 (27.2%) after the worst snow storm in the past five decades. Furthermore, the adult females (30.1%), juveniles (38.1%) and infants (55.4%) suffered greater than those adult males (15.7%) (Y. Li 2010).

Currently, it is quite popular for global warming to be blamed for biodiversity losses and pest outbreaks on the earth. However, based on historical records of over thousands of years, it was found that, in ancient China, outbreaks of locust tended to occur in cold periods with more droughts (Stige *et al.* 2010, Tian *et al.* 2012). A study revealed that as the ocean water temperature increases, plankton is more active in polar areas and, as a result, increases food energy for fishes (Baeseman 2009). There is evidence showing that temperature increase is positive for amphibians, at least, especially the Yangtze crocodile, an endangered species in China (Y. Li 2011). Studies on fossil record in Australia also show that during the cooling of global oceans there was a steep drop in barnacle diversity (Buckeridge 2010). Thus, the effects of temperature increase may be variable depending on species and regions.

Published Papers

In 2010 and 2012, the program organized and published two special issues on BCGC in *Integrative Zoology*, edited by Nils Chr. Stenseth and Zhibin Zhang, respectively.

Papers Published in 2010

- The biological consequences of global change. *Nils Chr. STENSETH*
- Ecometrics: the traits that bind the past and present together. *Jussi T. ERONEN, David P. POLLY, M*

FRED, J DAMUTH, DC FRANK, V MOSBRUGGER, Christoph SCHEIDEGGER, Nils Chr. STENSETH and Mikael FORTILEUS

- Climate change and invasive species: double jeopardy. *Susan A. MAINKA and Geoffrey HOWARD*
- Climate optimum rejuvenates the Mediterranean marine world. *Francis Dov POR*
- Some biological consequences of environmental change: a study using barnacles (Cirripedia: Balanomorpha) and gum trees (Angiospermae: Myrtaceae). *John BUCKERIDGE*
- Direct impacts of recent climate warming on insect populations. *Christelle ROBINET and Alan ROQUES*
- Effects of temperature and hydric environment on survival of the Panamanian golden frog infected with a pathogenic chytrid fungus. *Heidi M. BUSTAMANTE, Lauren J. LIVO and Cynthia CAREY*
- Climate change induced range shifts of Galliformes in China. *Renqiang LI, Huidong TIAN, and Xinhai LI*
- A multi-scale approach to understanding climate effects on offspring size at birth and date of birth in a reptile. *Chloé D. CADBY, Geoffrey M. WHILE, Alistair HOBDA, Tobias ULLER and Erik WAPSTRA*

Papers Published in 2012

- Biological consequences of global change: opportunities and challenges. *Zhibin ZHANG*

- Adélie penguins and temperature changes in Antarctica: a long-term view. *Craig D. MILLAR, Sankar SUBRAMANIAN, Tim H. HEUPINK, Siva SWAMINATHAN, Carlo BARONI and David M. LAMBERT*
- Direct impacts of climatic warming on heat stress in endothermic species: seabirds as bioindicators of changing thermoregulatory constraints. *Stephen A. OSWALD and Jennifer M. ARNOLD*
- Opportunism and the resilience of barnacles (Cirripedia: Thoracica) to environmental change. *John S. BUCKERIDGE*
- Is the expansion of the pine processionary moth, due to global warming, impacting the endangered Spanish moon moth through an induced change in food quality? *Charles-Edouard IMBERT, Francis GOUSSARD and Alain ROQUES*
- Global climate change is confounding species conservation strategies. *Harold KOPOWITZ and Bradford A. HAWKINS*

Website and Data-base Construction

In 2011, the project set up a primary website and database

(<http://www.globalzoology.org/BCGC/>).

Through the website, BCGC aims to build an open access database to promote data sharing among scientists. The website also functions as an instrument and platform to increase its visibility and influence on BCGC.

3.3 Action plan for 2012-2016

- **Action 1:** Program network

expansion

- To attract more scientists and members
- To promote its influence and increase research capability
- **Action 2:** Website and database construction
 - To build an open access database
 - To promote data sharing among scientists
- **Action 3:** International symposia or workshops
 - To organize two international symposia or workshops
 - On range shift of species under global warming
 - Responses of biodiversity change to human disturbances
- **Action 4:** Publications
 - To publish a special issue of BCGC in *Integrative Zoology*, an SCI-indexed journal
- **Action 5:** International training course on BCGC
 - To organize 2 international training classes under the BCGC theme

3.4 Looking forward

The BCGC program provides an excellent platform for scientists around the world to collaborate in exploring the impact of global change on biodiversity, infectious diseases, agricultural pests, invasive species and many other topics of interest. In the future, BCGC will expand its research networks to include more international scientists. This will help reveal different regional responses to biological aspects of global change.

BCGC will continue to improve its website and database quality which will further promote idea exchanges and accurate modeling studies. BCGC will also improve public awareness about its research output, which may help in the policy-making of governments for managing our biological resources. For detailed updates of the BCGC Program, please see Attachment D.

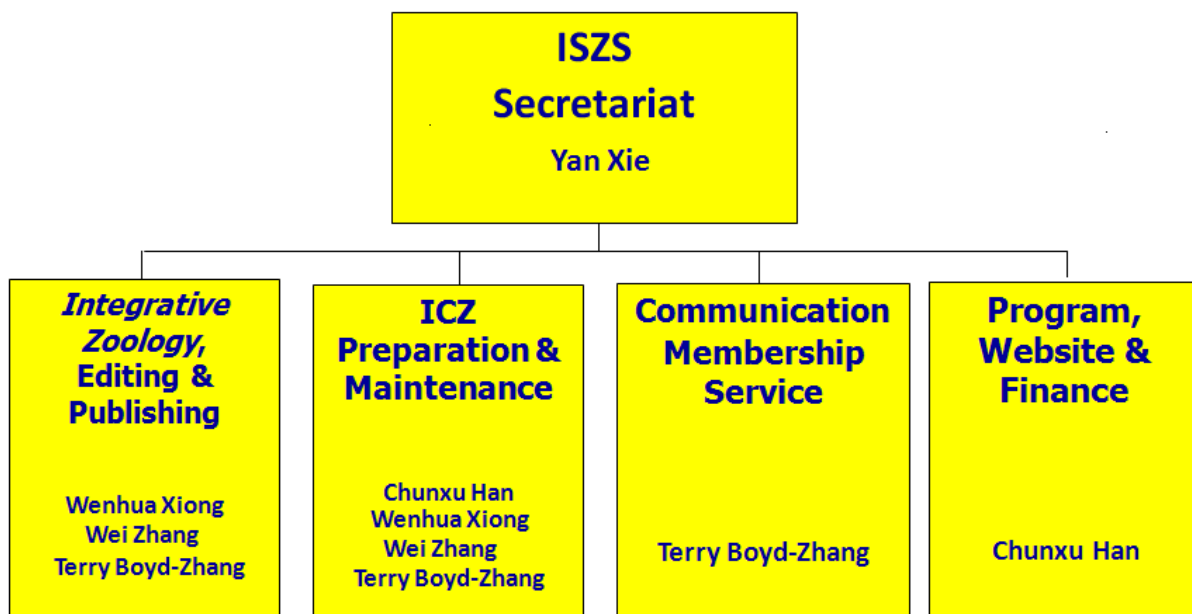


4 Secretariat Structure

Under the leadership of the ISZS Executive Committee, the Secretariat is currently divided into six major areas of responsibility: *Integrative Zoology* editing and publishing, ICZ preparation and maintenance, communication, membership service, website and finance.

As the Secretariat is operating on an extremely tight budget, each business area is connected to, and dependent upon, other functional areas. Importantly, the Secretariat needs to be responsive to the ISZS membership, including provision of informed and timely responses to issues arising. In light of this, the Secretariat has adopted a structure that places staff within

Secretariat Working Structure



different areas of responsibility, allowing them to develop a broad competence in all fields of their work.

The job responsibility of each working area is set out below:

Integrative Zoology editing and publishing (Coordinator: Wenhua Xiong + Wei Zhang + Terry Boyd-Zhang)

- Article management
- Liaise with Wiley
- Keeping accounts

Communication, membership service (Coordinator: Terry Boyd-Zhang)

- Society and journal promotional material
- Membership management
- Executive Committee requests

Program, website and finance (Coordinator: Chunxu Han)

- Scientific research program coordination
- Website development
- Liaise with other international/national organizations
- Promotion of society to attract funding
- Opportunities to attract funding

ICZ preparation and maintenance (Wenhua Xiong + Wei Zhang + Terry Boyd-Zhang + Chunxu Han)

- Manage delegation to ICZ
- Recruit papers for INZ from conference attendees
- Student prize management
- Report, flyer and agenda preparation

Each business area is connected to and dependent upon other areas at Secretariat

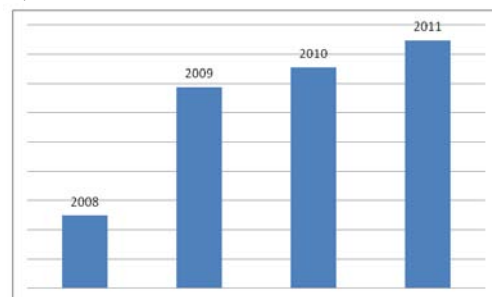
5 Finances

As the ISZS is registered with the authorities in China, the ISZS, as well as its financial statements, is audited every year by the Ministry of Civil Affairs of the People's Republic of China. This is the local legal requirement to which ISZS must comply. The ISZS passed all audits and, in 2010, was appraised by CAST as a good society.

According to audited income statements, the ISZS had a total income of US \$508,079.82 for the last 4 years (2008-2011) and total expenditure US \$510,374.37, a deficit of US \$2294.55 in balance. For detailed income and expenditure statements, please see the ISZS Income Statement on next page.

ISZS income was relatively stable for last four years

The ISZS income was relatively stable for the last four years, especially after 2008 and despite the economic and financial environment around the world. This stable income is largely due to ISZS formal registration in China, so ISZS enjoys favorable policies to apply for funding from CAS and CAST in the country. Also, in 2009, the ISZS became a member of the IUBS and initiated the BCGC international research program, so a total of over US \$50,000.00 funds were received from IUBS.



Income growth at the ISZS (in US \$)

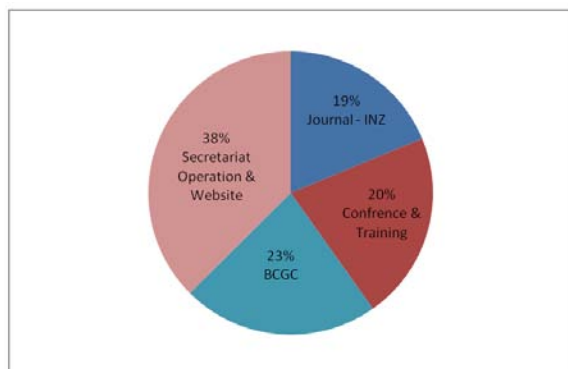
The ISZS Income Statement

Contents	2008 (US\$)	2009 (US\$)	2010 (US\$)	2011 (US\$)	Total (US\$)
Income					
IOZ	43 894.30	43 928.37	30 199.16	31 741.50	149 763.33
BCGC Program CAS	0.00	65 892.55	37 748.95	31 741.50	135 383.00
CAS	5 852.57		22 649.37	57 134.70	85 636.64
CAST	0.00	10 249.95	27 179.25	12 696.60	50 125.80
3r ISIZ	0.00	8 785.67	0.00	0.00	8 785.67
4th ISIZ	0.00		12 079.67	0.00	12 079.67
IUBS	0.00	6 630.50	19 946.17	32 386.25	58 962.92
Member fee	0.00	702.85	0.00	0.00	702.85
Others	0.00	1 464.28	1 207.97	3 967.69	6 639.94
Total	49 746.87	137 654.17	151 010.54	169 668.24	508 079.82
Expenditure					
Journal	21 947.15	23 428.46	27 179.25	25 393.20	97 948.06
3rd ISIZ	0.00	20 499.90	0.00	0.00	20 499.90
4th ISIZ	0.00		39 258.91	0.00	39 258.91
Training Course	0.00		0.00	39 676.87	39 676.87
BCGC Program	0.00	46 856.93	27 179.25	42 851.02	116 887.20
Website	2 926.29	4 392.84	3 774.90	4 761.22	15 855.25
Secretariat					
Salary	14 631.43	29 285.58	37 748.95	41 263.95	122 929.91
Office expenses	11 705.15	14 642.79	15 099.58	15 870.75	57 318.27
Total	51 210.02	139 106.50	150 240.84	169 817.01	510 374.37
Balance	-1 463.15	-1 452.33	769.70	-148.77	-2 294.55

The ISZS Major Fund Sources

Financial Year	US\$ 1,000	Source
2004-2005	65	IOZ, CAS
2005-2006	75	IOZ, CAS
2006-2007	65	IOZ, CAS
2007-2008	50	IOZ, CAS
2008-2009	138	IOZ, CAS, CAST
2009-2010	151	IOZ, CAS, CAST, IUBS
2010-2011	170	IOZ, CAS, CAST, IUBS
Total	714	

Of all the funds, 20% was allocated to ISZS organised conferences and training courses; 23% to international scientific research programs, especially the BCGC program; 19% to the official journal, *Integrative Zoology*; and 38% to the ISZS Secretariat daily operations and website maintenance.



Allocation ISZS funds

6 Perspectives

According to the ISZS statutes, the mission of the ISZS remains unchanged and the work of the Secretariat continues to reflect these long-standing goals under the direction of GA and EC. Under such a framework, the Secretariat has identified the following key

working areas for next triennium (2012-2016):

- To provide guidance and support to the next ICZ congress host
- To expand membership, services and to promote the ISZS influence
- To publish *Integrative Zoology* (INZ) and to promote the influence and usage of INZ
- To promote BCGC as a flagship international scientific program of ISZS and to coordinate, collaborate and cooperate on international programs for joint research, public education and for young zoologists
- To maintain the ISZS website and to promote international zoological data networks
- To organize international symposia and workshops
- To work with BioEd, a programme within IUBS, to promote global biological education
- To actively promote professional standards and practice in zoology and to provide ethical stewardship in both our members and our environment
- To seek more external funding

Mission of the ISZS remains unchanged and the work of the Secretariat continues to reflect long-standing goals



Key work area 1: To provide guidance and support to the next ICZ congress host

The ICZ is held every four years. During each ICZ, the ISZS reviews achievements and issues in zoological research and recommends further developments and directions for zoological research. This also identifies and determines the priorities of ISZS.

For Secretariat support of the ICZ, the Secretariat uses different methods and instruments to mobilize ISZS members to attend the ICZ, works closely with the host country to ensure ICZ success, calls for scientific papers and publishes a special issue of *Integrative Zoology* for the ICZ. The Secretariat helps to produce meeting agendas, fliers, proposals and other necessary material for the ICZ, according to requirements from the host.

Key work area 2: To expand membership, services and to promote the ISZS influence

Members form the foundation of the ISZS. The Secretariat makes full use of all opportunities to expand ISZS membership, especially institutional members, to promote the ISZS influence in the world.

According to current geographic distribution of membership, the Secretariat must conduct targeted communication throughout Central Europe, the Middle East, Africa and South America, in order to increase membership in these regions and to ensure a balanced and representative international membership coverage in the society. The Secretariat's short-term goal is to increase corporate membership by 10%, individual membership by 20% and our geographic member base by 10%. Long-term, the Secretariat will work at having institutional and individual memberships in 80% of countries around the world.

To increase the services provided to members and the influence of ISZS, the Secretariat operates as a clearinghouse of zoological information to members and zoologists in the world. The website,

newsletter and journal provide members and zoologists with the latest information on zoology.

In addition, when the Secretariat secures sufficient funds, it will provide fellowships to members who are recognized for outstanding service to the zoological community and ISZS.

Recently, the Secretariat reviewed the way it processes new memberships in order to increase ISZS influence. It identified several areas which need improvement. One area is that the ISZS has designed a Member's Pack, sent to all new members. This pack includes:

- A welcome letter from the President
- Certificate of Membership with the ISZS official seal
- A full list of members
- Promotional material for ISZS
- Back-issues of and promotional material for *Integrative Zoology*
- Contact cards for Secretariat staff
- An institutional membership application form

Key work area 3: To publish *Integrative Zoology* (INZ) and to promote the influence and usage of INZ

Integrative Zoology is the official journal of the ISZS. With a focus on zoology as an integrative discipline encompassing all aspects of animal life, the journal presents a cross-zoological picture of the many levels of zoological inquiry, both horizontally and vertically. The journal's aim is to represent and reunite the various disciplines that look at animal life from different perspectives and at providing the basis for comprehensive understanding of zoological phenomena on all levels of analysis.

With *Integrative Zoology* as an SCI indexed journal with an impact factor of 1.2, INZ is becoming an effective international instrument for scientists and researchers to demonstrate their achievements and work on zoological sciences. In order to make the journal more attractive to its readers around the world and to promote its influence and usage, the Secretariat and the Editorial Office pay great attention to improving the quality of published articles.

INTEGRATIVE ZOOLOGY

Integrative Zoology is a multidisciplinary journal publishing zoological research which encompasses all aspects of animal life.

Reasons to publish in the journal:

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Impact Factor 1.208

Currently, the Secretariat and the Editorial Office are housed at the Institute of Zoology (IOZ), CAS and staff often share duties between these two areas. This arrangement is beneficial to *Integrative Zoology*. The Secretariat and Editorial Office will continue to promote the journal to visitors of IOZ, work with Wiley-Blackwell on marketing and manuscript quality and continue to improve the editorial processes and information management system of this young journal so as to promote and increase the influence and usage of INZ in the world.

Key work area 4: To promote BCGC as a flagship international scientific program of ISZS and to coordinate, collaborate and cooperate on international programs for joint research, public education and for young zoologists

Joint scientific research is an important goal for ISZS. Over the last few years, the BCGC program has become the core of IUBS scientific programs. Its scientific merit and outcome of the program have been well appreciated. The program has become influential through organizing international symposia, workshops, training courses and broad communication with scientists in the world. At the 31st IUBS GA in Suzhou the program was unanimously approved for the next triennium (2013-2015).

In the coming years, BCGC will expand its research networks to include more international scientists. It will continue to improve its website and database quality which will further promote idea exchanges and accurate modeling studies about BCGC. The program will continue to improve public awareness about its research and output, so as to make it the flagship international scientific program for the ISZS.

Furthermore, ISZS continues to accept submissions for new topics to be covered by working groups. The Secretariat continues to actively promote this function. This includes assisting in the formation of working groups, coordinating communications amongst members and writing final reports and scientific papers arising from the business of the working group.

Key work area 5: To maintain the ISZS website and to promote international zoological data networks

The website www.globalzoology.org is the official online platform for the ISZS. Currently, although teeming with content and useful information, it is limited in its ability to effectively serve members. The Secretariat continues to improve it and make more effective. Our vision in the long run is



for the website to become a major online destination for researchers, potential donors and members.

Key work area 6: To organize international symposia and workshops

Evidence shows that international symposia and workshops are good opportunities for ISZS members and zoological scientists to share views, discuss research and broaden their knowledge and promote ISZS influence. After each ICZ, ISIZ and workshop, there is great improvement in mutual understanding between specialized zoological societies and there are more interdisciplinary applications for their scientific research achievements. These events also present opportunities for the Secretariat to promote membership, society services and *Integrative Zoology*. Currently, both the ICZ and ISIZ are becoming the best-known international meetings of ISZS and, in the next four years, the Secretariat will continue to organize ISIZ and workshops, so as to increase ISZS influence and INZ usage in times when an ICZ is not scheduled.

Key work area 7: To work with BioEd, a program within IUBS, to promote biological education globally

International education and training is important for the Secretariat. Over the past four years, the ISZS organized four training courses in cooperation with different international organizations and programs. Those included UNESCO, IOZ, CAS, IUBS, BioEd and MAB Programs, etc. In the coming years, ISZS will continue to function as an organizer (or coordinator) of different education and training courses, especially with BioEd (a program within IUBS), to promote zoological as well as biological education globally.

Key work area 8: To actively promote professional standards and professional practice in zoology and to provide ethical stewardship in both our environment and for our members

Even though there is greater awareness of environmental degradation, it is still occurring and many of the condition of the world's key biomes have reached critical



levels. The crisis is largely due to human population growth, with the related increase in resource use; a closed system, the environment generally loses out. In addition, the pressures in academia may encourage scientists to follow an unethical path and this may be the manner in which they also deal with biological systems and human communities. This unethical stance may also be the way in which they interact with their peers, which is reflected in increasing plagiarism and intellectual theft.

The ISZS sees its role in providing opportunities to debate these issues, such as workshops, conferences and the active mentoring of young scientists, where differing perspectives can be discussed, and hopefully resolved.

Key work area 9: To seek more external funding

Like any new professional society, the ISZS and its Secretariat have faced ‘establishment difficulties’, usually arising from the absence of an established infrastructure to deal with day-to-day issues of the society. However, the ISZS is fortunate because, when the ISZS was established, the IOZ and the Bureau of International Cooperation, CAS, offered their generous support.

The IOZ provided sufficient resources to establish a permanent office, staff and infrastructure for the ISZS Secretariat in Beijing.

Though the income at ISZS has increased steadily over the past four years, the ISZS must become more financially capable, if it is to secure a future as a sustainable organization. To achieve this, the Secretariat will continue to lobby IOZ, CAS, CAST, and other institutions, for their continued support. Additionally, the Secretariat must approach other national and international institutions, foundations, scientific enterprises and obtain grants for financial support, whenever possible.

7 Conclusion

Over the past four years, under the leadership of the ISZS EC and with the support from the hosts of the Secretariat, the ISZS has made remarkable progress and achievement. The influence of the ISZS and INZ both are growing rapidly. The ISZS Secretariat functions very well in realization of the ISZS vision and in fulfillment of its mission. The Secretariat is confident that ISZS will play a more influential and proactive role in global zoological sciences in the future.

