



**International Embryo Transfer Society**  
Parent Committee on Companion Animals,  
Non-Domestic & Endangered Species  
**(CANDES)**

Report to the IETS Board of Governors  
1 June 2003

**Mid-Year Report Published in the IETS Newsletter**

Officially approved and acknowledged by the 2001 IETS Board of Governors, the inaugural meeting of the newest IETS Parent Committee on Companion Animals, Non-Domestic and Endangered Species (CANDES) was held on 13 January 2002, just before the commencement of the 28<sup>th</sup> Annual Conference of the IETS in Brazil. Since then, two working meetings have been held in Omaha, Nebraska (April and September, 2002), the latter in conjunction with the 2<sup>nd</sup> International Symposium on Assisted Reproductive Technology for the Conservation and Genetic Management of Wildlife. The reports from the working meetings and the proceedings from the two symposia will be available to IETS members on the CANDES webpage link on the IETS website (<http://www.iets.org>).

The Terms of Reference for the IETS Parent Committee on CANDES, approved in January 2002 by the IETS Board of Governors, states the following as their mission statement and goals: The Parent Committee on Companion Animals, Non-Domestic and Endangered Species (CANDES) of the International Embryo Transfer Society is an advisory committee, technically specialized in comparative reproductive physiologies and the application of reproductive biotechnologies in companion animals (including cats, dogs, birds, amphibian, reptiles, fish and invertebrates and excluding domestic horses), non-domestic species (including farmed animals such as buffalo, cervids, camelids, ratites and canids, in addition to a diverse array of zoo animals) as well as their endangered species counterparts. It will provide a unique and valuable resource to the IETS membership and will respond to their questions and requests for advice related to those matters both at a national and international level. It will submit recommendations based on current scientific knowledge to the IETS Board of Governors to further provide guidance and advice to international governmental regulatory agencies, recognized animal specialty groups and organized conservation programs, such as those of regional zoo associations as well as the World Conservation Union (IUCN) by direct liaison with the Conservation Breeding Specialist Group, Species Survival Commission.

The aim of the IETS CANDES Parent Committee is to serve as an informational resource pertaining to the management of reproduction in companion animals and non-domestic species in order to provide a foundation for the safe (from a disease standpoint) and effective application of assisted reproductive technologies. An objective of the Committee will also be to provide the IETS membership informed counsel that can instruct and advise on the technical feasibility and realistic expectations (based on

previous scientific evidence) of the application of some of the more basic to the most technically advanced reproductive biotechnologies to companion animals, non-domestic and endangered species. An important goal of this Committee is to assist in the understanding of the unique reproductive strategies of those species and to facilitate the application of assisted reproductive technology to these species. The IETS CANDES Parent Committee will regularly communicate their activities to the IETS Board of Governors in the form of written reports and, with Board approval, will relate information directly to the IETS membership.

The activities of IETS CANDES Parent Committee will be wide ranging and will:

- 1) summarize the results of previous applications of assisted reproductive techniques in companion animals, non-domestic and endangered species and provide details for proven and established protocols;
- 2) develop and provide instructional information (including thorough reference lists) on the reproductive patterns and strategies of unique species and methods to manage their reproduction;
- 3) identify areas in need of further research and development to allow the application of embryo transfer and related technologies to unique species;
- 4) clearly define international regulatory requirements to provide guidance for the safe and legal transport of tissues and germplasm from companion animals, non-domestic and endangered species for breeding or research purposes; and
- 5) develop, with approval of the IETS Board of Governors, an electronic system or IETS website link that would transfer pertinent information to the IETS membership.

The IETS CANDES Parent Committee is organized as four Subcommittees:

Regulatory Subcommittee (Co-Chairmen: Elizabeth G. Crichton and Justine O'Brien) Besides the health and safety concerns when transporting animal tissues, those who work with rare and endangered species have additional restrictions by federal (e.g., United States Fish and Wildlife Department) and international (e.g., CITES, Convention on International Trade of Endangered Species) agencies which are often ill-defined and inconsistent between countries. An important objective of this Subcommittee is to assist in clearly defining conditions and requirements to facilitate and expedite the safe and legal transport of biological materials, while at the same time holding high standards to minimize the potential of inadvertent disease transmission, without unduly restricting technological advances in research and conservation programs. The information will be compiled, organized and made available to the IETS membership through the IETS website.

Towards this aim, specific goals of the Regulatory Subcommittee are identified as follows:

1. To produce a database of contact people for researchers with queries concerning imports and exports of biological materials from animals covered by CANDES;

2. To summarize information on import/export regulations and compile this information in a standardized format (template) made available through the IETS website;
3. To address ownership and transfer agreements/issues relating to the transfer of biological materials, particularly for range countries.

Information is currently being compiled on the following countries which should be completed and posted on the CANDES web page by September 2003: Australia, Botswana, Brazil, Canada, China, Costa Rica, Finland, Indonesia, Kenya, Madagascar, Namibia, New Zealand, Norway, Singapore, Uganda and the USA.

Research Subcommittee (Co-Chairmen: Rebecca Krisher and William Swanson)  
The initial objective of this Subcommittee will be to compile information on existing standard operating procedures (or protocols) proven to be effective for synchronizing ovarian cycles, artificial insemination, embryo collection, production and transfer, as well as sperm and embryo cryopreservation in these species. This information will be compiled as a Resource Manual for a diverse array of taxa, with updates and new additions included on a regular basis (in March and September annually), and written reports will be made available to IETS members through the IETS website. In addition to the protocols, or standard operating procedures, the Resource Manual will include supporting manuscripts/data and contact details for the author(s) of each protocol. Taxon-based coordinators have been identified who will circulate letters to people known to be working within their field. Initially, efforts will focus on generating protocols for the following taxa: carnivores, ungulates, birds, amphibians/reptiles, non-human primates, invertebrates, marsupials, marine mammals and fish.

A future objective of the Research Subcommittee will be to identify and prioritize critical areas in need of research to develop protocols for embryo transfer and related technologies in companion animals, non-domestic and endangered species. A consideration will be whether this prioritization should target technologies, taxa or species. The priorities of conservation organizations (e.g., IUCN Species Survival Commission) will also be considered. This information will be made available to research programs to draw upon.

Technology Subcommittee (Co-Chairmen: Damien Paris and Philip Damiani)  
The main goal of this Subcommittee is to assist in identifying and prioritizing key topics, and novel technologies that need further development to facilitate and broaden the application of embryo transfer and related approaches in companion animals, non-domestic and endangered species. The Subcommittee will make recommendations for the adaptation of current pre-existing technologies routinely used in the agriculture and human assisted reproductive fields for animals covered by CANDES. In addition, the Subcommittee will provide guidance and assistance to the best of their knowledge to the researcher(s) in the further development of new novel technologies for CANDES. To achieve these aims the following goals have been identified:

1. To develop a current list of technologies, equipment, methodologies that are routinely used in the agriculture and human assisted reproductive fields and to determine, if any, applications these technologies, equipment or methodologies have for CANDES.
2. To generate a list of technologies, equipment, methodologies or compounds that are presently not available to CANDES and would have a significant, universal application in CANDES or other animals. Examples include:
  - Non-invasive LH or ovulation detection
  - Pheromone detection
  - Novel superovulation, ovarian stimulation and estrus synchronization regimens
  - Novel instrumentation/methodologies for field applications (e.g., portable incubators,)
  - Freeze-drying/room temperature preservation of tissue, gametes and embryos
  - New embryo transfer approaches
  - Unique bio-phenomena that exist in CANDES that may lead to an advance in general ART applications (e.g., embryonic diapause in macropodids).

The top ten technologies are now in the process of selection. These will then be prioritized on a scale of importance and significance, and then plans of action will be formulated.

3. To identify a list of CANDES taxa/species that demonstrate low or no fecundity in captivity. These taxa/species will serve as current targets for the development of novel technologies to increase reproductive success. To accomplish this goal, individual members have been assigned specific regions to explore a variety of taxa: Europe, North America, Africa, Latin America (Central & South), Asia, Australia, New Zealand & Papua New Guinea, Middle East, South East Asia, Arctic/Antarctic. Ad hoc Committees to assist them in gathering information on taxa/species found in their assigned regions. The initial objective would be to consider mammals first, then birds followed by invertebrates.
4. To generate an information network that will compile relevant information, such as experts, researchers, protocols, and bibliography for CANDES species as well as for new and potentially useful technology, methods or equipment.

Health & Safety Subcommittee (Co-Chairmen: William V. Holt and Naida M. Loskutoff) This Subcommittee will serve several important purposes including:

1. Review literature on embryo and pathogen interactions in companion animals, non-domestic and endangered species (which is quite limited at present) and report these to the HASAC Research Subcommittee; and

2. Review literature and identify studies on pathogen interactions with semen in all species. The three main areas of focus will be:

- To determine whether specific infectious agents are found in semen.
- If so, whether disease is known to be transmitted via natural breeding, artificial insemination or embryo transfer.
- If such pathogens in semen can be removed without affecting sperm viability.

One outcome of this exercise will be to eventually develop tools that may be used to assess the risk of transmitting specific pathogens via artificial insemination or embryo transfer.

The next working meeting of the IETS Parent Committee on CANDES will be hosted by the Henry Doorly Zoo in Omaha, Nebraska on 3-5 October 2003. For more information, please refer to the CANDES webpage link on the IETS website, or contact the Subcommittee Chairmen, Parent Committee Chairman ([NaidaL@omahazoo.com](mailto:NaidaL@omahazoo.com)) or Secretary, Amanda R. Pickard ([Amanda.Pickard@ioz.ac.uk](mailto:Amanda.Pickard@ioz.ac.uk)).

Respectfully Submitted,  
Naida M. Loskutoff, IETS CANDES Chairman