



# Barcode of Life Initiative

CONSORTIUM FOR THE BARCODE OF LIFE

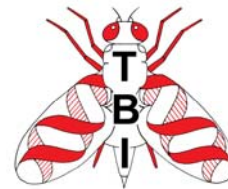
- Promote barcoding as a global standard
- Build participation
- Working Groups
- BARCODE standard
- International Conferences
- Increase production of public BARCODE records



BOLDSYSTEMS



Smithsonian Institution



# CBOL's Role in BOLI

- Promote barcoding as a global standard
- Build participation, esp. developing countries
- International Conferences
- Working Groups
- Accelerate submission of BARCODE records
  - Create Steering Committees,
  - Launch projects
  - Seek funds for projects

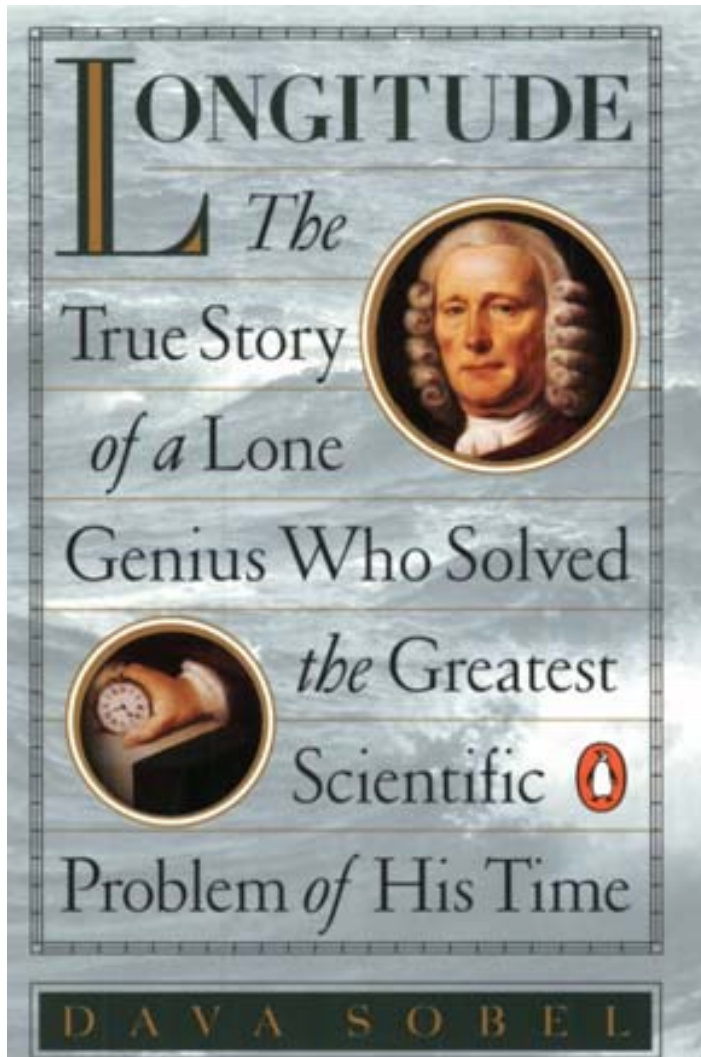
# Challenges to BOLI

- Serving research AND research infrastructure
- Defining overarching research goals
- Championing standardization, minimalism
- Clarifying and communicating goals
- Cultural change
  - Implementing standards
  - Integrating results from individuals, teams, networks, international campaigns
  - Accelerating release of data in BOLD and on GenBank

# The BOLI Research Program

- Lots of local taxonomic hypotheses
- How many species are there?
- Integrating up (with AToL):
  - All-species regional inventories
  - Phylogeographic patterns (Currie)
- Integrating down (with population biology)
  - Speciation processes (Baker)
  - Mitochondrial selection and coevolution
- *New data visualization tools are critical*  
(I know you can't read/interpret this slide...)

# Explaining and Communicating



Is the optimal approach to determining longitudinal position through:

- science (astronomy) or
- technology (a clock)?

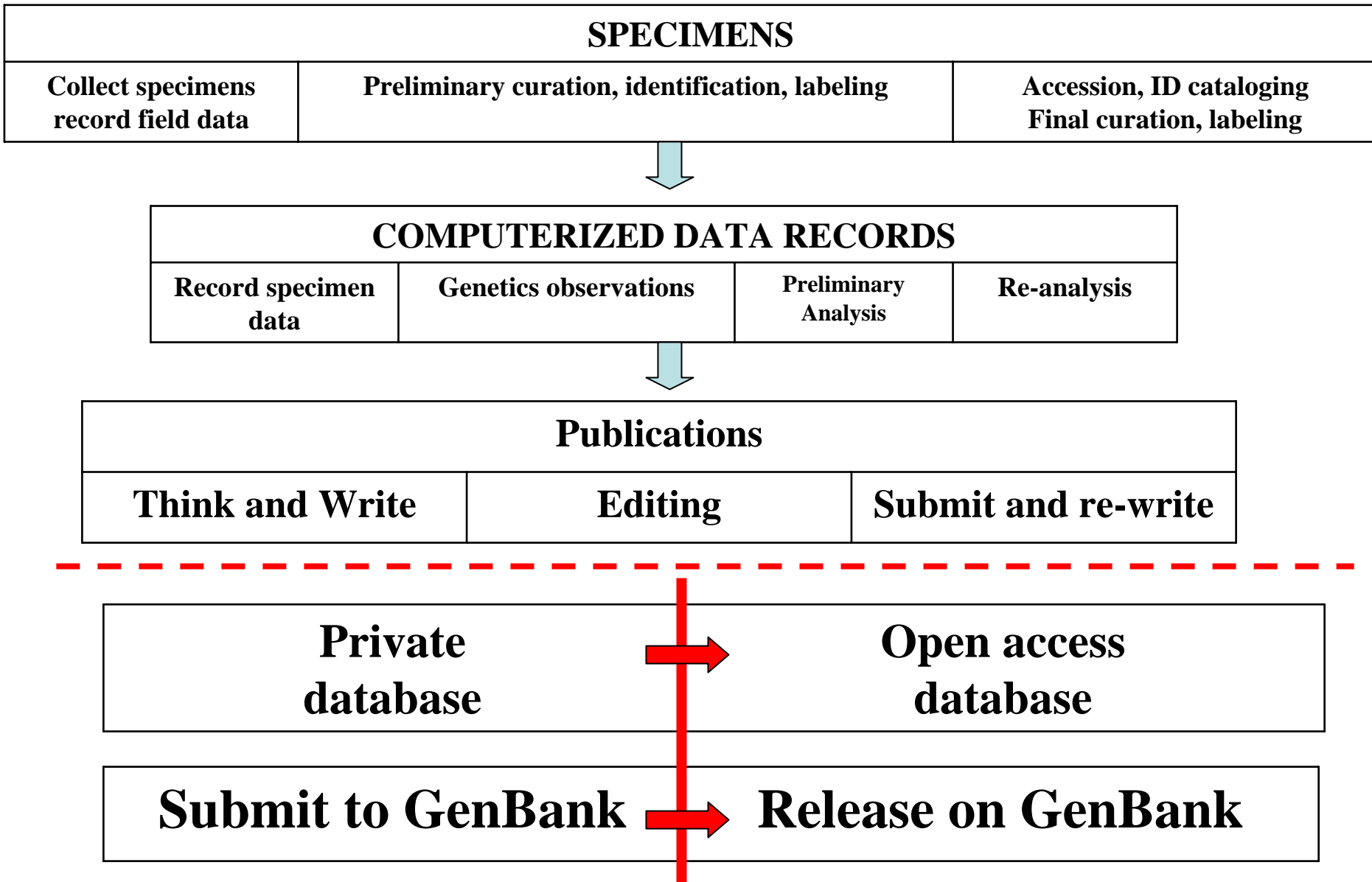
The decision doesn't change the need for:

- navigational skills,
- geographic exploration, or
- cartography

# Driving Cultural Change

- Integrating databases:
  - Sequences, vouchers, species names
- Accelerating taxonomic outputs
  - Digital libraries, Encyclopedia of Life
  - Species registration, ZooBank
- Promoting open access to data
  - The barcode “data commons”
  - Creating a reward system for data publication
  - PLoS One “data release” papers
  - Community feedback for data curation

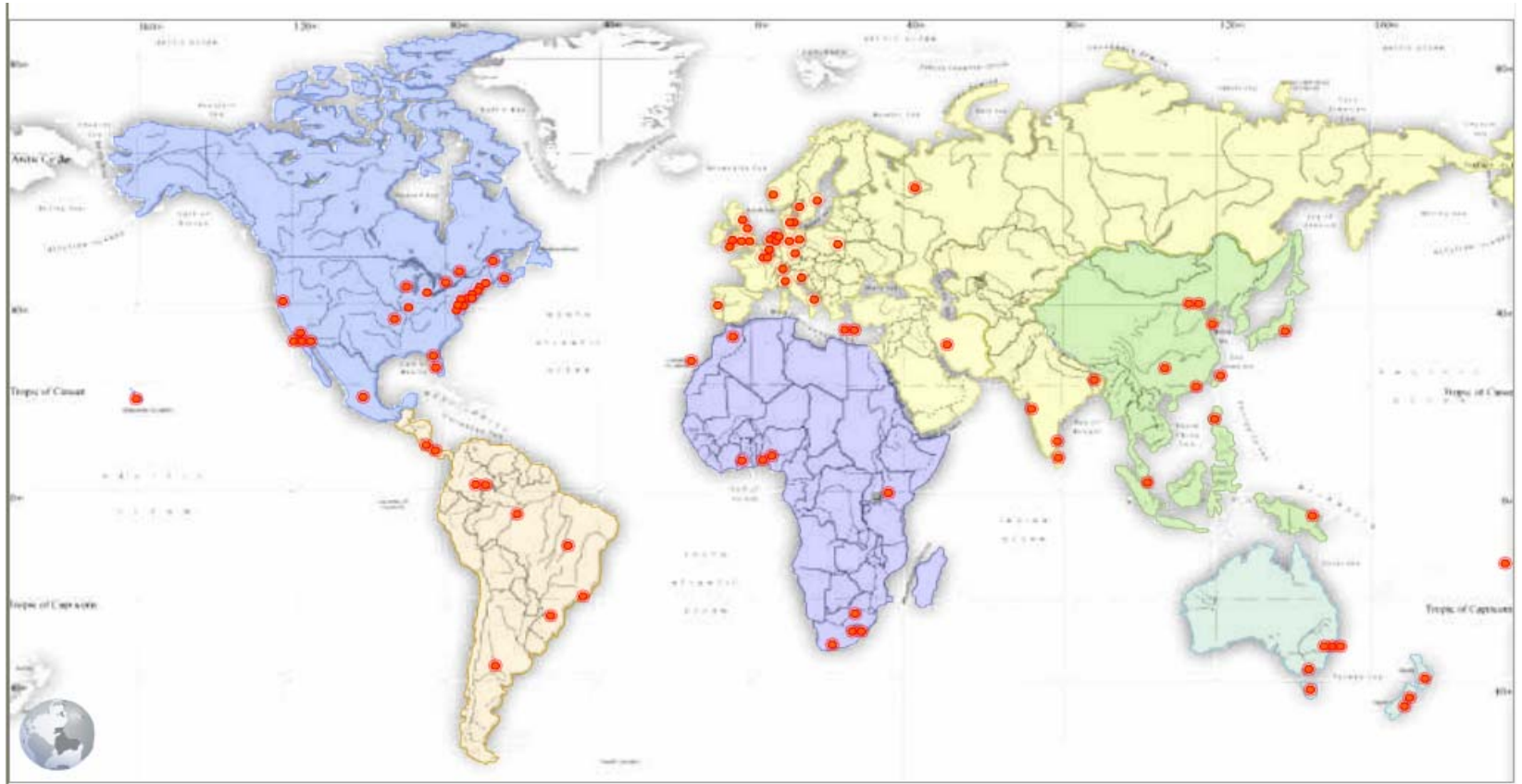
# Data Release in the Barcoding Process



# Consortium for the Barcode of Life (CBOL)

- First barcoding publications in 2002
- Cold Spring Harbor planning workshops in 2003
- Sloan Foundation 2-year grant for \$800K May 2004
- Secretariat opens at Smithsonian, September 2004
- First international conference February 2005
- \$1.55 million 2-year renewal in April 2006
- Now an international affiliation of:
  - Natural history museums, biodiversity organizations
  - Users: e.g., government agencies
  - Private sector biotech companies, database providers

# CBOL Member Organizations: 2007



- 150+ Member organizations, 45 countries
- 30+ Member organizations from 20+ developing countries

# CBOL's Strategy

- Collaborate with existing biodiversity initiatives
- Work to connect existing systems with new data standards; avoid creating new databases
- Rely on GenBank, EMBL and DDBJ as stable data repositories
- Global participation
- Engage taxonomists and applied user communities
- Set tangible, realistic goals, near-term results

# Taipei Barcode Conference

- Second International Barcode Conference
- Academia Sinica, week of 17 September
- Regional Barcode Meeting for South/SE Asia
- CBOL Working Groups
- FISH-BOL/Marine Fisheries workshop
- Short course on biodiversity informatics

# Facilitating/Launching

- Steering Committees and Workshops:
  - Tephritid, Mosquito Demonstrator Projects
  - Barcoding for Vertebrate Conservation
  - African Scale Insects
  - Fungal Barcoding
- Collaborations with:
  - Census of Marine Life (Amsterdam, May 06)
  - Assembling the Tree of Life (Duke, April 07)
  - EMBO (Rome, May 07)
  - Population geneticists (Banbury 3, October 07)

# Outreach Activities

- Regional meetings in:
  - Cape Town, South Africa, 7-8 April 2006, SANBI
  - Nairobi, Kenya, 18-19 October 2006
  - Brazil, February 2007
  - Taiwan, September 2007
- Second International Barcode Conference
  - Taiwan, September 2007
- Introduce barcoding and its applications
- Identify priority projects for the region
- Form regional networks, Steering Committee

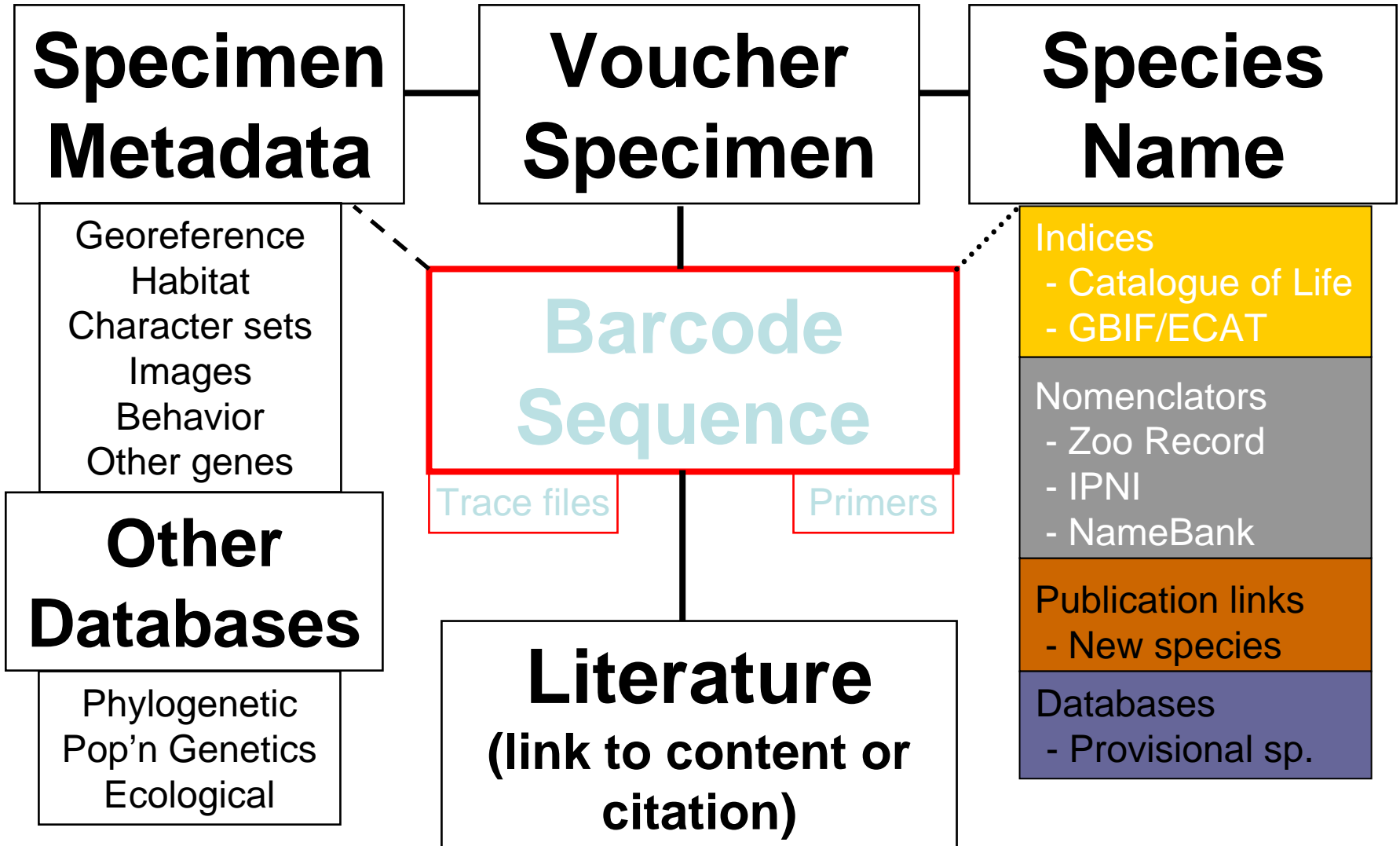
# CBOL's Working Groups

- ***Database:*** Designing/constructing the Barcode Section of GenBank
- ***DNA:*** Protocols for formalin-fixed and old museum specimens; Producing LIMS for dissemination
- ***Data Analysis:*** Beyond phenetic methods; population genetics perspective
- ***(Plants: Initiated discussions of plant barcode gene region(s))***

# Barcode Data Standards

- Consensus results of Front Royal meeting
  - GBIF
  - ITIS
  - GRIN
  - NBII
  - Species2000
  - IPNI
  - ICZN
  - ZooRecord
  - OBIS
- Structured link to voucher specimen
- Species name selected from authority
- Online access to metadata
- Trace files and quality scores
- Minimum sequence length

# BARCODE Records in INSDC



# Voucher Specimen ID

- Based on Darwin Core
- Eventually will be replaced by GUID
- Triplet:

Institution Acronym : Collection : Specimen #

NMNH : FISH : 123456

# Provisional Species ID

- Globally unique, stable, retrievable
- Can't be confused with valid species name