Summary of IATTC Dolphin Workshop

- Background:
  - Currently, no reliable indices of abundance for eastern tropical Pacific (ETP) dolphin stocks:
    - No surveys since 2006;
    - Purse-seine observer data problematic.
  - Workshop requested by European Union (EU) "… with invited experts in the relevant fields, to discuss data collection and assessment methodology to improve these evaluations".

- On October 18-20, 2016, IATTC held a workshop on:

  Methods for Monitoring the Status of Eastern Tropical Pacific Ocean Dolphin Populations

- Funded by the EU and the Pacific Alliance for Sustainable Tuna.

Summary of IATTC Dolphin Workshop

- Goal: to identify data types and methods of analysis, both conventional and novel, for monitoring and assessing ETP dolphin status.

- Focused on methodologies for fishery-independent data.

- Background documents prepared in advance.

- Questions addressed:
  - If another fishery-independent, ship-based survey could not be conducted, what other existing methods could be used that would produce an estimate of abundance with a CV comparable to that from previous surveys?

  - Are there new methods that could provide abundance estimates at lower costs?

  - Could the current fishery-independent ship-based survey be improved?

Summary of IATTC Dolphin Workshop

- There were 21 invited participants:
  - world experts in marine mammal abundance estimation and population modeling;
  - extensive experience in estimation of dolphin abundance in the ETP.

André E. Punt (Chair; University of Washington)
Steve Buckland, Bernie McConnell (Univ. of St. Andrews, Scotland)
Peter Fretwell (British Antarctic Survey, UK)
Justin Cooke (CEMS, Germany)
Michel Dreyfus (Instituto Nacional de Pesca, México)
Lisa Ballance, Jay Barlow, Susan Chivers, Paul Fiedler, Karin Forney, Tim Gerrodette, Jeff Moore, Phil Morin, Wayne Perryman, Robert Pitman (SWFSC)
Toshihide Kitakado (Tokyo Univ. of Marine Science and Technology, Japan)
Hans J. Skaug (University of Bergen, Norway)
Megan C. Ferguson (AFSC)
Andy Webb (HiDef)
Robert Jannarone (Brainlike, USA)

- Appendix A of the Workshop Report lists workshop staff and workshop observers.

Summary of IATTC Dolphin Workshop

Background documents:

- Data Available for Assessing Dolphin Population Status in the Eastern Tropical Pacific Ocean (Michael Scott *et al*.)
  - The description of data sources is in preparation to be published as an IATTC Special Report.

- Review of Potential Methodologies for Estimating Abundance of Dolphin Stocks in the Eastern Tropical Pacific Ocean (Stephen Buckland *et al*.)
  - In preparation for submission to a peer-reviewed journal.

- Review of Contemporary Cetacean Stock Assessment Models (André Punt)
  - In press in the Journal of Cetacean Research and Management.

Summary of IATTC Dolphin Workshop

- Topics of presentations by invited participants:
  - available data sources for ETP dolphin abundance estimation;
  - ship-based line-transect surveys, current methods and potential modifications
  - telemetry;
  - high-resolution digital aerial surveys (e.g., cameras in unmanned aircraft; satellite imagery) and automated image processing;
  - genetics mark-recapture and close-kin methods
  - Passive acoustics
  - Population dynamics modelling for cetaceans

- Appendix D of the Workshop Report contains abstracts for invited participant presentations.

Summary of IATTC Dolphin Workshop

- Several of the conclusions/recommendations from the workshop:
  - Ship-based line-transect surveys
    - High cost but currently the only reliable means of abundance estimation
    - Evaluate and adjust for imperfect detection of dolphin schools on the trackline
    - Reduce variance in the abundance estimates through encounter-rate modeling; pooling data over species to estimate detection function
    - Review the area covered by the survey and the stratification within the survey area
  - Genetic mark-recapture and close-kin methods
    - Could be less costly in the future, if samples collected by fishery observers
    - Research needed
  - Drones-based aerial surveys
    - Technology is advancing rapidly
    - May become less expensive than ship-based surveys
    - Research would be needed before drone-based aerial imagery could be used to estimate abundance.
    - First phase: determine if correction factors for covariate effects on dolphin detection in imagery (*e.g*, due to animal's depth below the sea surface; sea state) can be estimated.

IATTC Dolphin Workshop products

Workshop Report

- Provides a summary of discussions that took place at the workshop and recommendations for research.
- Will be published as an IATTC Special Report.

Background Documents and Workshop Report available online:

http://www.iattc.org/Meetings/Meetings2016/DolphinWorkshop/IATTCDolphinWorkshop2016ENG.htm