CALIFORNIA DOLPHIN ONLINE CATALOG

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Photo: Amanda Debich   NOAA Permit #727-1915

http://seamap.env.duke.edu/photoid/cdoc

OVERVIEW

Three decades of research have been conducted on California coastal common bottlenose dolphins *(Tursiops truncatus),* and multiple collections of photo-identification images, including related sighting metadata, are available for analysis. Study area locations include: San Quintín and Ensenada, Baja California, Mexico; and San Diego, Orange County, Santa Monica Bay, Santa Barbara and Monterey Bay in California, USA.

This poster reports on the development of a centralized, shared, digital repository for historical and future data that can be openly accessed by researchers.

This online database and photo-catalog, called the "California Dolphin Online Catalog" (CDOC), was launched in January 2012 and is hosted by the Duke University OBIS-SEAMAP program and funded by a grant from Pacific Life Foundation.

The objective of CDOC is to provide an online, open-access, digital database resource and research tool freely available for use by scientists who study coastal bottlenose dolphin populations throughout their geographic range along the west coast of North America.

While CDOC is primarily intended to be a scientific resource, it can also serve an important role in facilitating citizen-scientist engagement and public awareness. To date, principal investigators have contributed data identifying 697 individual dolphins collected in areas extending from Ensenada, Baja California, Mexico to Monterey Bay, California, USA during 1981-2001.

CDOC provides online features for contributors to: load dolphin sighting data and photographs; view dolphin dorsal fin images and review sighting history data; compare dorsal fin images to identify matches across study areas and sighting dates; communicate potential matches to one another and share a process for matching decisions; map sighting data for dolphins; and, view CDOC data with OBIS-SEAMAP visualization tools.

Further development will be focused on adding more recently collected data, refining the online application, and seeking collaboration and input from other interested data holders.

Collaboration and data sharing: Some of the many contributors to CDOC

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In the field, researchers take high-resolution, digital, dorsal fin photos, since most California coastal common bottlenose dolphins can be reliably identified over years by natural markings on their dorsal fins – e.g. by notches located on the leading edge, tip and, especially, trailing edge of the dorsal fin (see inset).

Digital photo-editing software is used to edit original survey images, so that fin features can be viewed in fine detail. The best fin image for each dolphin is selected from each survey, and the best image (or two) for all surveys is used to create a catalog for a particular study area and time period. Now, what if researchers want to share such catalogs with others?
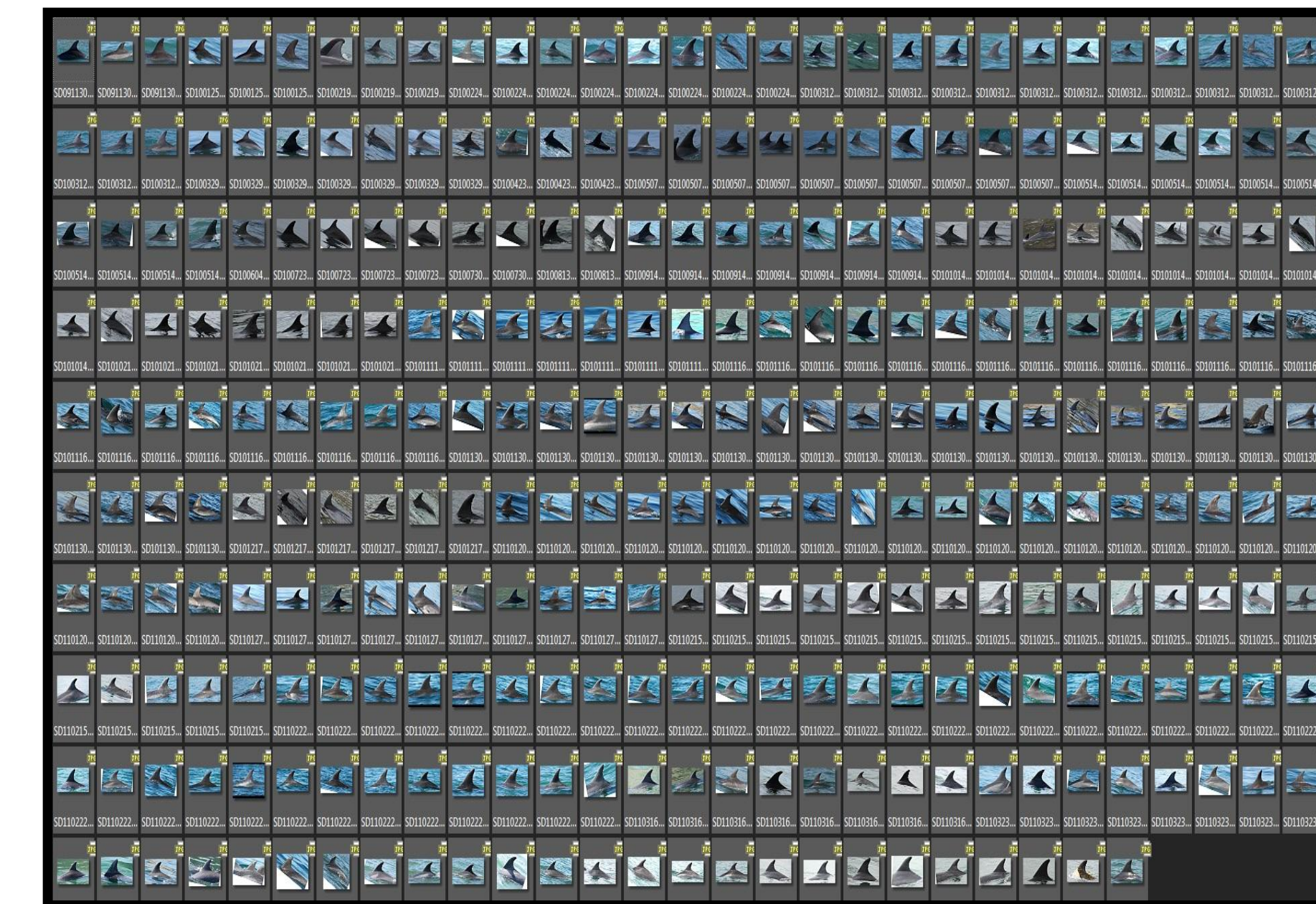
CDOC is an information technology platform that allows dolphin researchers to collaborate via the Internet and to contribute data from their respective dolphin catalogs into a larger, more comprehensive California coastal catalog.

A Model of an Online Photo-ID Catalog
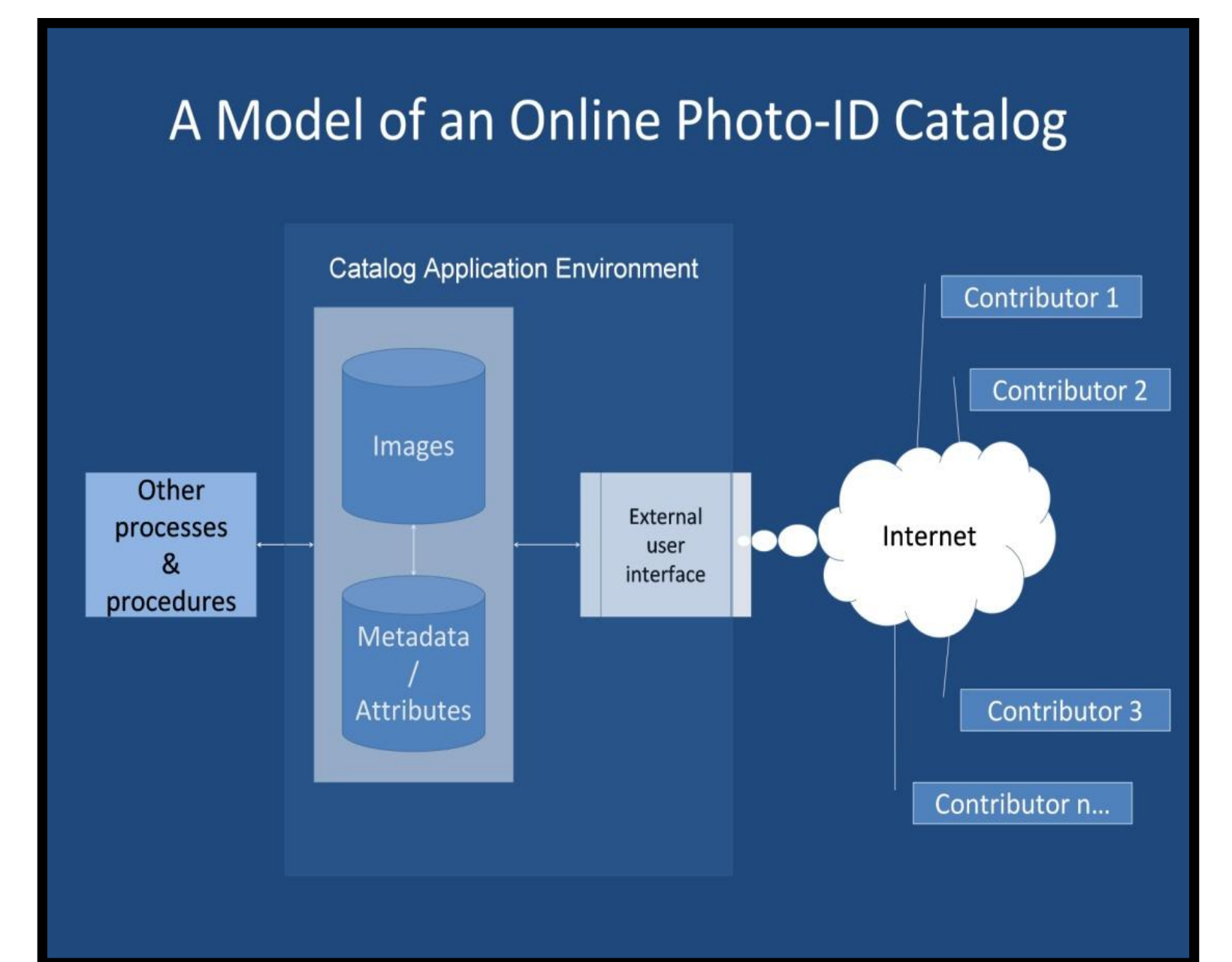
CDOC provides a standardized database structure and an online database application with data management & workflow features; thus, contributors can use a standardized process for collaborating and sharing data in CDOC without limitations on how they maintain their individual study area catalogs.
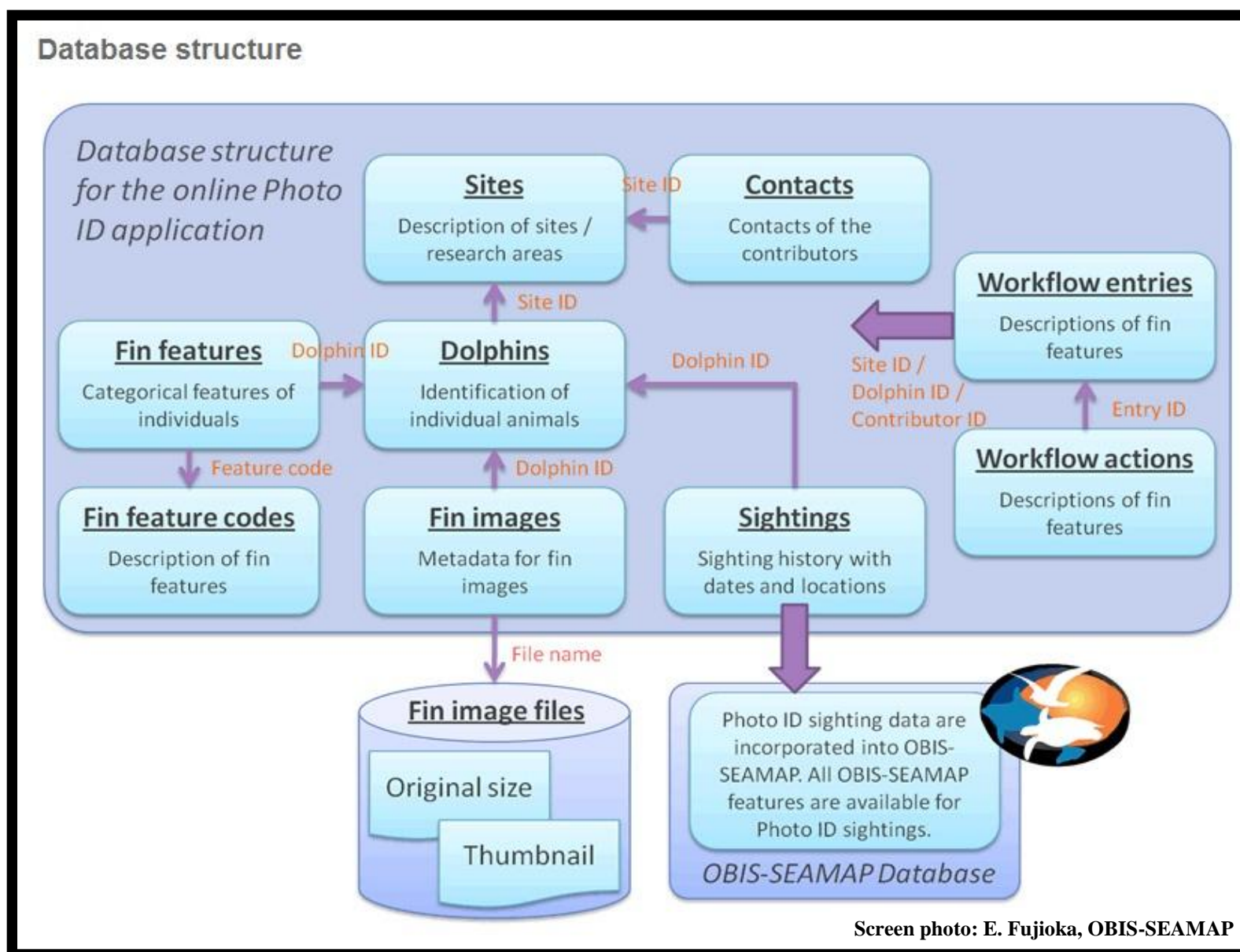
Dolphin catalogs from different contributors can be represented and shared in CDOC. CDOC provides a side-by-side view of dolphin catalogs from different contributors or study areas, allowing comparisons of dolphin fin images for research purposes. One of the centerpieces of the CDOC utility is to "re-sight," or match, dolphin images over time and across study areas.
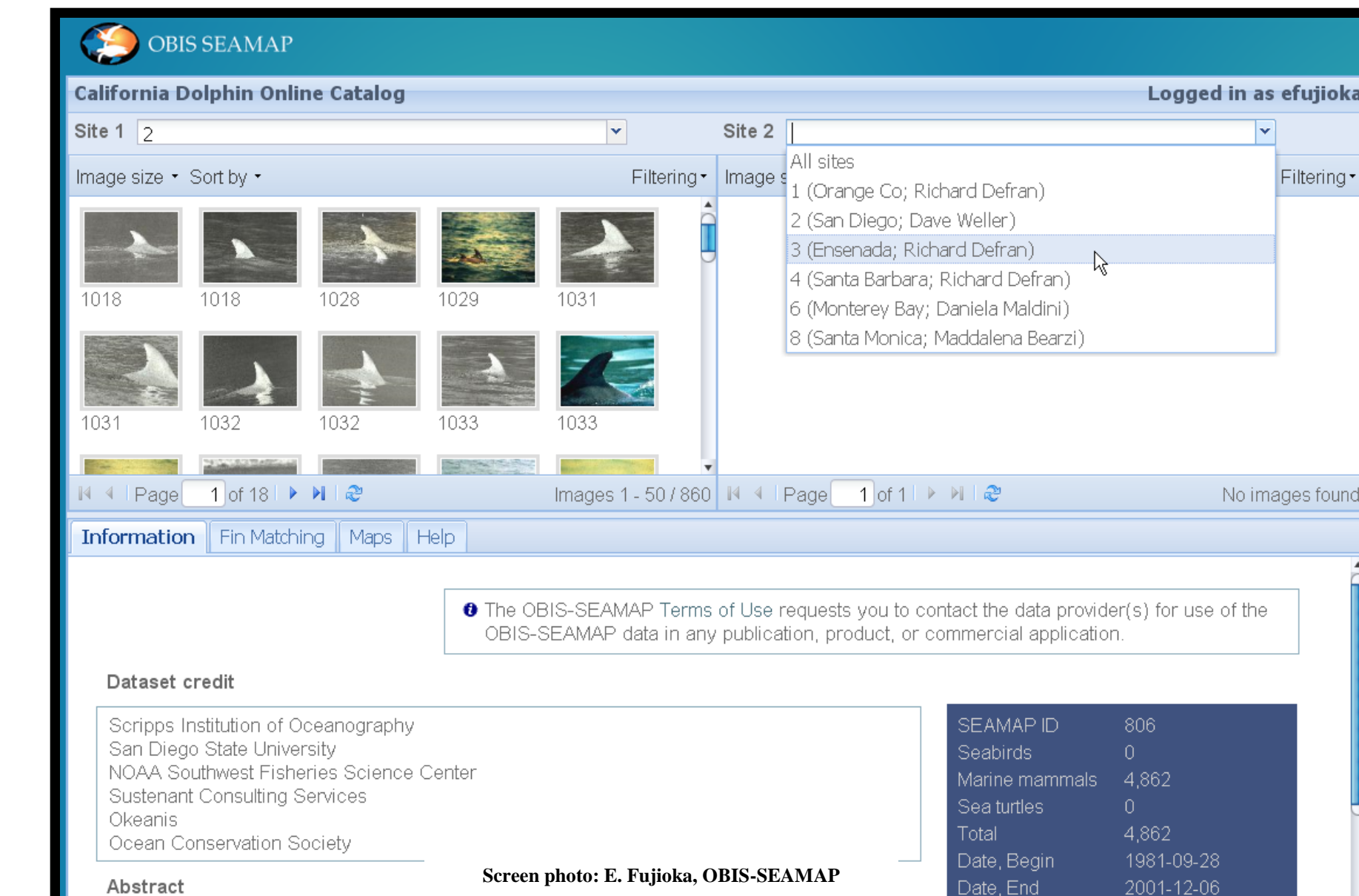
Dolphin dorsal fin images from different contributors' study areas can be compared using CDOC Fin Matching tools to enlarge or shrink, rotate, flip and overlay images to identify potential matches. In addition, the sighting location histories of the dolphins can be readily mapped for comparison.

Database structure

Screen photo: E. Fujioka, OBIS-SEAMAP
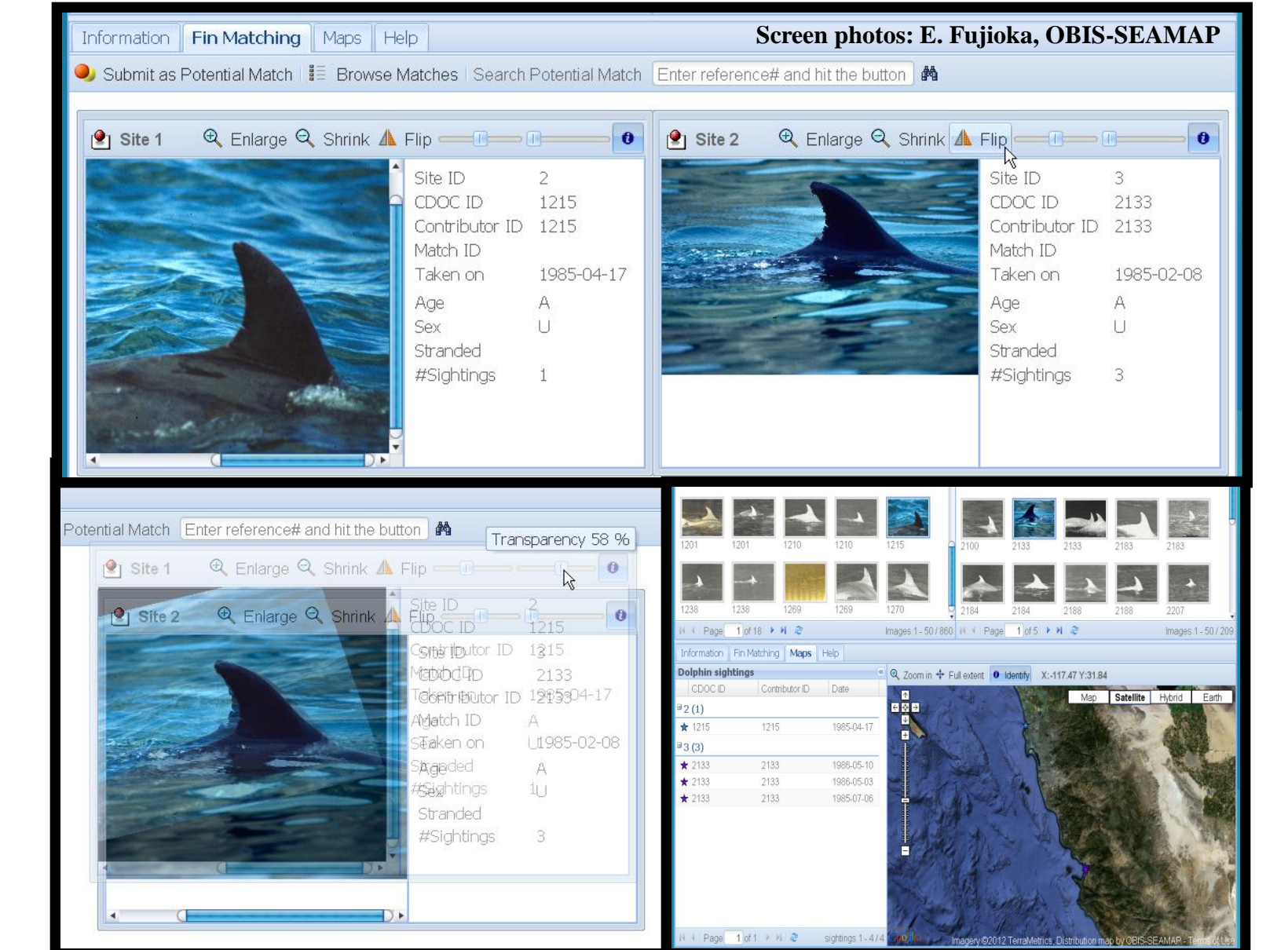
A potential match can be identified by anyone logged into CDOC. Then, when the "Submit as Potential Match" button is clicked, e-mail notifications are sent to the original contributors of the dolphin images under consideration. Contributors then share an online process of review – see next panel.
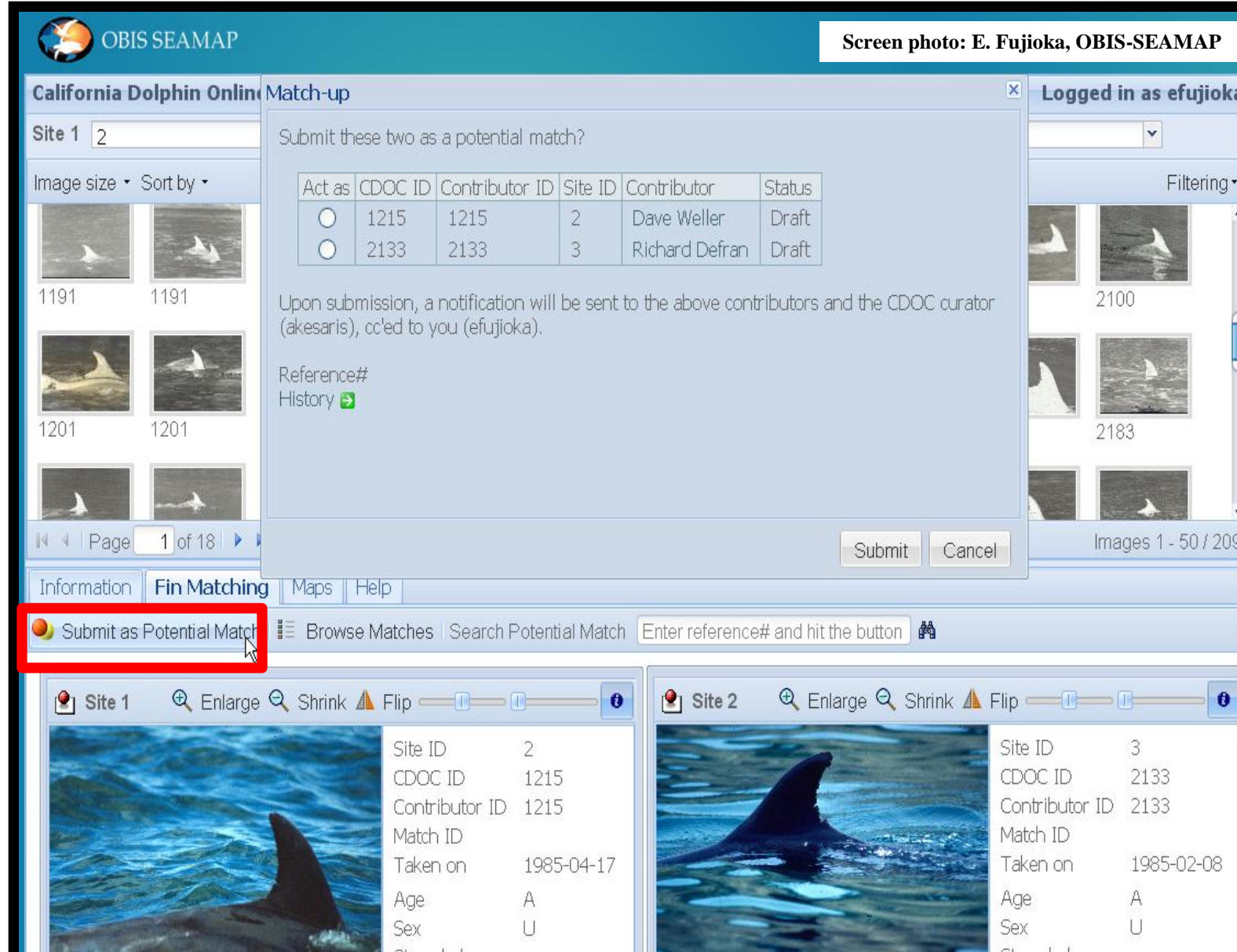
Here's the process of online matching review: a draft match is submitted to review with the contributors who originally uploaded the respective fin photos. Each contributor receives an e-mail with links that launch CDOC to review the potential match. If both contributors consent to the match, CDOC links the database records.
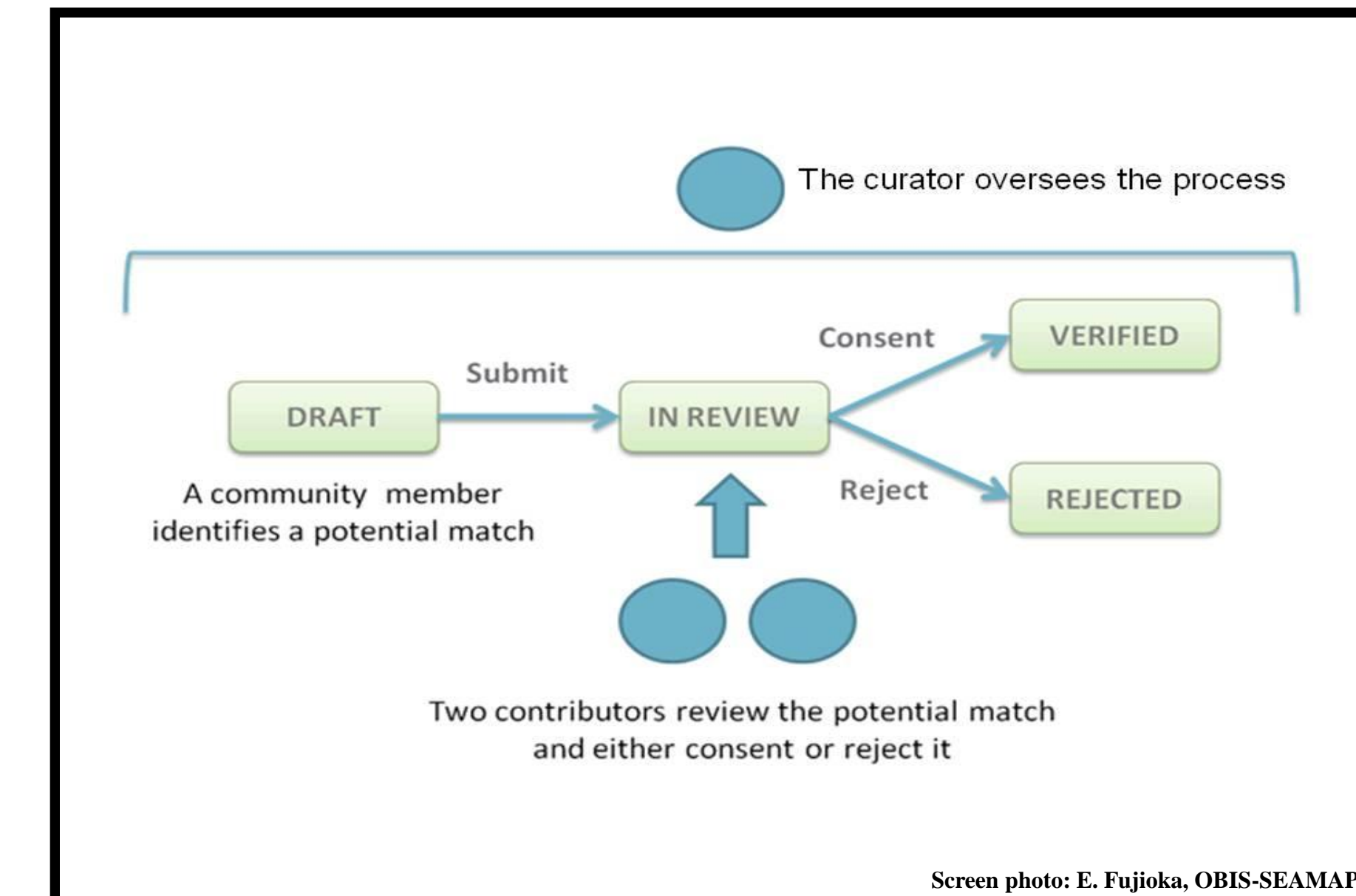
The CDOC database is also registered as an OBIS-SEAMAP data set, providing access to additional mapping and visualization tools. For example, sighting location data can be mapped and is color–coded by dolphin, allowing users to compare sighting location histories for multiple dolphins.

The curator oversees the process

DRAFT → Submit → IN REVIEW → Consent → VERIFIED
                              → Reject → REJECTED

A community member identifies a potential match

Two contributors review the potential match and either consent or reject it

Screen photo: E. Fujioka, OBIS-SEAMAP

http://seamap.env.duke.edu/dataset/806