

OF INTEREST TO MANAGERS

Randall L. Brown, DWR

- Biologists and engineers working in the Bay-Delta now have access to daily outflow measurements calculated by the USGS using a dataset from a series of permanently installed flow monitoring devices. The data are available from February 1996 to date (page 3). These estimates supplement DAYFLOW values which are calculated from inflow, diversions, and estimated consumptive use in the Delta. The new data set is particularly useful when considering short-term flow effects such as movement of tagged salmon smolts released at a particular site.
- Mike Chotkowski of DFG has spent the past year looking at extensive records of fish occurrence in shallow waters around the Bay-Delta (page 12). In the table below, Perry Herrgesell and Mike condensed the occurrence data by habitat and native and introduced species. The data indicate that, although the percent non-native is somewhat variable in the system, in the Delta, non-natives far outnumber native fish in shallow water. This information should be considered when planning additional shallow water habitat to help restore native fishes.
- Suchanek and others (page 19) describe preliminary results of studies to determine the potential for transfer of mercury from Bay-Delta sediments and island soil into the food web. They did find that the methyl mercury in biota was not evenly distributed across the study area but some areas showed signif-

icant bioaccumulation. Mercury bioaccumulation should also be considered when planning for additional shallow water habitat.

- Hymanson and others (page 25) describe the results of their recent trip to China to learn more about the chinese mitten crab. From the information gained it appears that we should not be unduly concerned about health impacts from eating the crab (this species does not carry the lung fluke), and impacts to agriculture and levees. It also appears that movement of migrating adult crabs can be guided thus it may be possible to keep them away from fish facilities. The caveat is that the crab may not behave quite the same in China as it does in the United States.
- According to Rees (page 46), we now have at least three species of introduced jellyfish in the Bay-Delta. Although there have been no documented local impacts of these introductions, introduced jellyfish in other systems have severely disrupted the food webs.
- Whitener and Kennedy (page 50) examined fish use of flooded lands on the lower reaches of the Cosumnes River—one of the few Central Valley streams with no major dams in its watershed. They found that the system was complicated and changed almost daily. They recommended additional research before making any large-scale habitat restoration plans.

Table 1 Summary of shallow water habitat data review^a

Type of Habitat	Data Set	Native Species (%)	Non-native Species (%)	Native Individuals (%)	Non-native Individuals (%)
Bay	1980 to 1986	57			
Delta and Lower Rivers	1994 to 1999	51			
Delta	1995 to 1999				
Mud/Sand		48	52	77.4	22.6
Bare Mud Flat		24	76	5.1	94.9
Vegetated Mud/Sand		38	62	5.8	94.2
Rip-rap, bare		34	66	11.6	88.4
Vegetated Rip-rap		34	66	5.3	94.7
Suisun Marsh Shallow Sloughs	1994 to 1997	46	54	37.0	63.0

^a Based on information developed by Mike Chotkowski, DFG and IEP.

IEP QUARTERLY HIGHLIGHTS—JANUARY THROUGH JUNE 1999

DELTA FLOW MEASUREMENT

Richard N. Oltmann, USGS

All of the UVM flow monitoring stations survived the winter high-flow period. However, there were periods when electronic or power supply problems resulted in missing data for three of the stations: San Joaquin River at Jersey Point (26 days during January; seven days from February through March); Middle River at Bacon Island (periodic short duration gaps during March and April); and Dutch Slough (six days due to vandals breaking into instrument shelter and stealing battery).

Daily Delta outflow that is measured indirectly using data from four UVM stations can be obtained from the IEP file server or the USGS Bay-Delta Hydrodynamics database. UVM-measured, Delta outflow data are available from 13 February 1996 to the present. UVM flow records are normally processed on a monthly basis and are available from the USGS database within two to four weeks after the end of each month (this includes the computation of daily Delta outflow). The flow data are then periodically transferred from the USGS database and loaded on to the IEP file server.

The tidal-flow data have been processed for the cooperative DWR and USGS hydrodynamic study of the confluence area of the Sacramento and San Joaquin Rivers (refer to previous issues of the *IEP Newsletter* for additional information on this study). Results of the September through December 1998 study were presented at last February's joint Bay-Delta Modeling Forum and IEP Workshop at Asilomar, and will soon be documented in a future *IEP Newsletter* article. The intent of the study was to develop three-month, tidal-flow hydrographs at nine locations within the confluence area using index-velocity measurements provided by ADCPs and S4s. Because of various problems, tidal-flow time series could only be calculated for six of the nine sites. However, flow relations between all of the monitoring sites were still ascertained by comparing successfully calculated flow time series with numerous flow measurements collected for calibration purposes at the sites where ADCP or S4 data were not available. The nine flow monitoring sites were (1) Sacra-

mento River upstream of Point Sacramento, (2) San Joaquin River (and Broad Slough) upstream of Point Sacramento, (3) Montezuma Slough near Sacramento River, (4) Middle Slough (only calibration measurements), (5) New York Slough, (6) Sherman Lake at Sacramento River, (7) Sherman Lake at Broad Slough (west side of Sherman Lake - only calibration measurements), (8) Mayberry Slough, and (9) Mayberry Cut (only calibration measurements). The data collected from this study will be used in the current recalibration of the DSM2 model.

The USGS and DWR provided funding to expand the existing UVM tidal-flow monitoring network by three stations; however, two-beam side-looking ADCPs (SL-ADCP) will be used to provide index velocities instead of UVMs. The three selected SL-ADCP sites are (1) Grant Line Canal at Tracy Road Bridge, (2) Old River at the Highway 4 crossing, and (3) Old River just east of the temporary barrier location near Delta Mendota Canal. The Grant Line Canal station has been operational since 6 May 1999; several calibration measurements have been collected, but the station has not yet been calibrated. The SL-ADCPs for the other two sites recently arrived from the manufacturer and will be installed once we receive the necessary installation permits.

ADCPs were once again deployed this spring in the South Delta with the hope of producing three-month long tidal-flow time series. The ADCPs were deployed on 15 April and are scheduled to be retrieved on 12 and 13 July 1999. ADCPs were deployed at two of the sites where ADCPs have been deployed during the last two springs (Turner Cut and Middle River south of Columbia Cut) and at three new sites (False River, Connection Slough, and Old River at San Joaquin River at Webb Tract). Unlike the previous two springs, a tracer-dye study was not done this spring.

ROCK SLOUGH MONITORING PROGRAM

Jerry Morinaka, DFG

Fish entrainment sampling at the Rock Slough intake of the Contra Costa Canal resumed on 10 March. Sampling was suspended while the sampling equipment stolen