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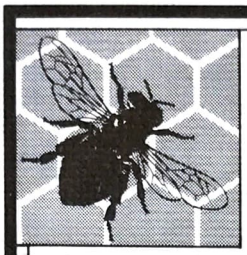
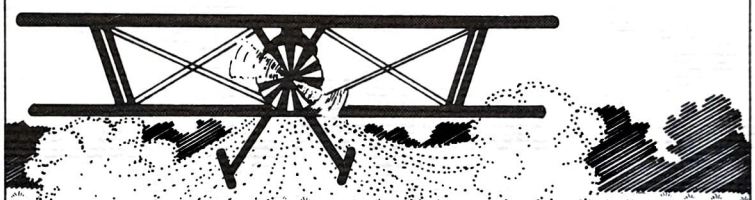


DEPARTMENT OF
AGRICULTURE

Division of Plant Industry



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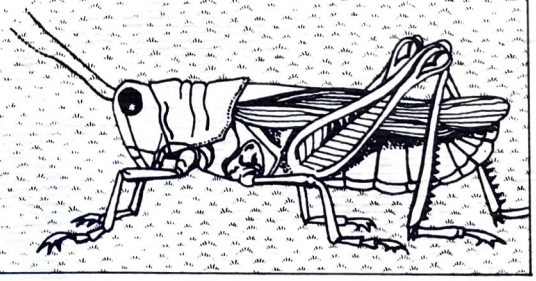


A G R I C U L T U R E

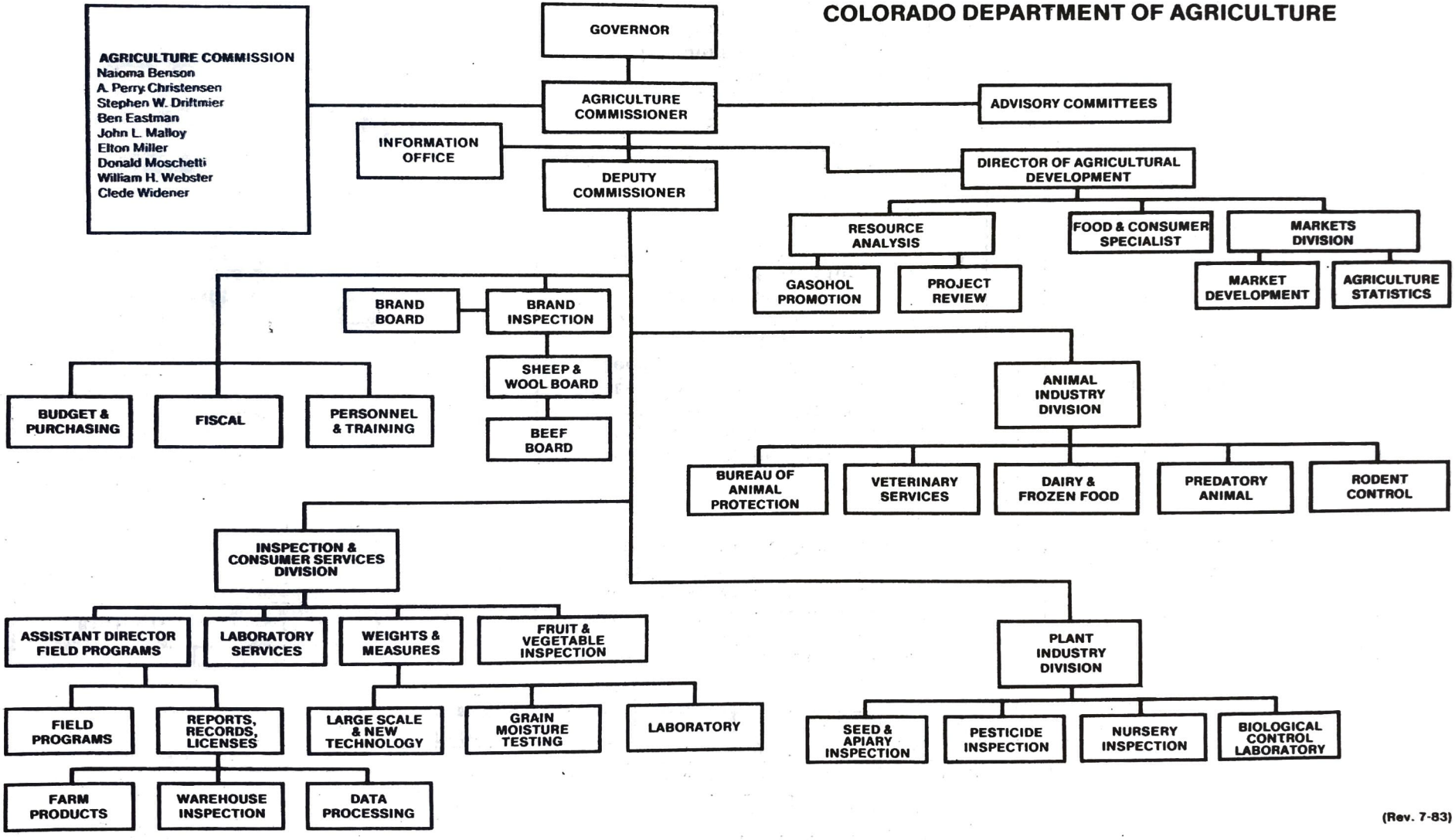
DIVISION OF PLANT INDUSTRY

ANNUAL REPORT

1983-84

This report is a summary of the control programs and services rendered by the Division of Plant Industry for the period July 1, 1983 through June 30, 1984.

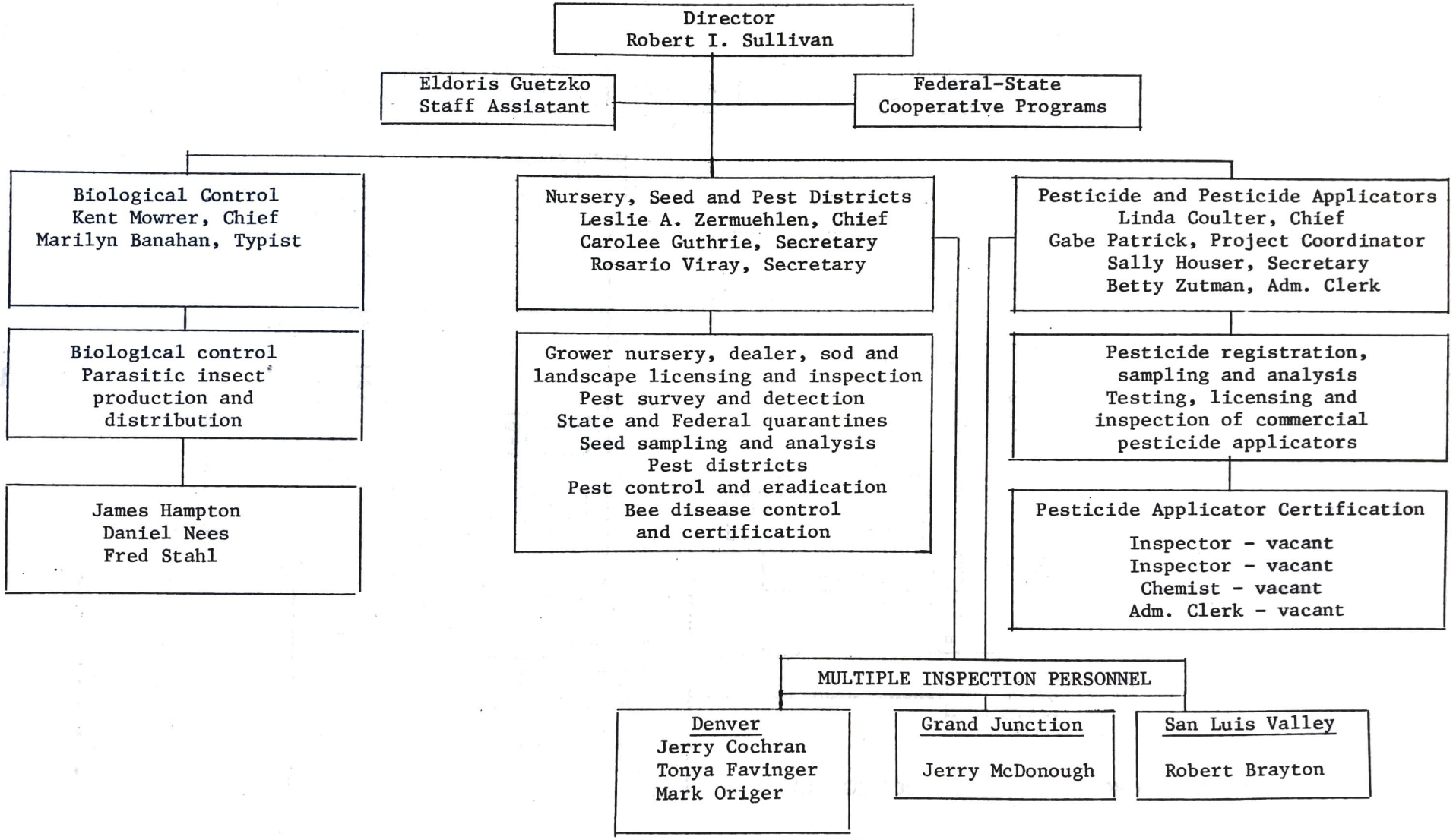
COLORADO DEPARTMENT OF AGRICULTURE



(Rev. 7-83)

ORGANIZATIONAL CHART

DIVISION OF PLANT INDUSTRY



BIOLOGICAL CONTROL SECTION

The Colorado Department of Agriculture Biological Control Section is responsible for rearing and releasing biological control agents on targeted plant and insect pests in Colorado. Acquisition of newly developed biological control organisms from the U.S.D.A. and other related agencies is another important function of the section.

In 1984, the biological control section was successful in rearing or collecting several important biological control agents of weed and insect pests for release. These programs included the control of the following pests:

1. Oriental fruit moth - an insect pest of peaches
2. Range caterpillar - an insect pest of short grass prairies
3. Pea aphid and greenbug - insect pests of alfalfa and small grains
4. Alfalfa weevil - an insect pest of alfalfa
5. Fall webworm - an insect pest of shade trees
6. Musk thistle - a plant pest of grazing areas
7. Puncturevine - a plant pest of agricultural and urban areas
8. Toadflax - a plant pest of grazing areas

Obtaining new organisms from the U.S.D.A. or other similar agencies proved to be successful as several insects were acquired for control of some important pests in the State. It is usually difficult to obtain new biological control agents as there is much research and quarantine procedures to go through before they become available for general release. Colorado was fortunate to receive three new insects during 1984. These insects were released on the following pests:

1. Toadflax - a plant pest of grazing areas
2. Bull thistle - a plant pest of grazing areas
3. Tentiform leafminer - a insect pest of apples and pears

Monitoring population dynamics of Colorado's present pest species is an additional function of the Biological Control Section. Trapping is important to determine location and concentrations of pest species in order to properly time release of biological control organisms. Survey for new plant and insect pests is necessary to keep abreast of potential explosive pest problems. The plant and insect pests that were surveyed in 1984 by the Biological Control Section are included in the following list:

1. Peach twig borer - insect pests of fruit
2. Oriental fruit moth - insect pests of fruit
3. Peachtree borer - insect pests of fruit
4. Range caterpillar - insect pest of short grass prairie
5. Apple maggot - insect pests of apples and pears
6. Codling moth - insect pests of apples and pears

7. Western cherry fruit fly - insect pest of cherry
8. Musk thistle - plant pests of grazing areas
9. Bull thistle - plant pests of grazing areas
10. Toadflax - plant pests of grazing areas
11. Leafy spurge - plant pests of grazing areas
12. Russian thistle - plant pests of urban areas

I. REARING AND RELEASE

Oriental Fruit Moth Parasite Program

Oriental fruit moth, *Grapholitha molesta*, continues to be a threat to western Colorado peach growers. The larva of this important fruit pest feed on the succulent twig terminals and, more importantly, the fruit. An effective method in keeping this pest at tolerant levels is the mass release of a braconid parasite, *Macrocentrus ancylivorus*. This parasite is mass reared at the insectary by using potato tuber moth, as a laboratory host. Parasite cocoons are packaged in small paper bags and distributed in orchards. Distribution is accomplished by the growers who are responsible for placing the bags in the orchards. This program eliminates the need for chemical control in most cases and also affords some protection to other beneficial parasites and predators.

During the peach growing season of 1984 a total of 2,100,00 *M. ancylivorus* were produced. These were distributed in 133 releases on approximately 1,711 acres of peaches. The release period began on 15 June and was completed 23 August. This program will continue to have major importance as approximately 30,000 new peach trees were planted in Mesa County in 1984. With the resurgence of the peach industry the control of Oriental fruit moth will continue to be necessary for successful peach production.

Range Caterpillar Parasitoid Program

The range caterpillar, *Hemileuca oliviae*, is a pest of range grass in southeastern Colorado. The larvae of this saturnid moth is a pest for two reasons. First, the range caterpillar feeds on the range grasses and second, the larvae are covered with poisonous spines.

From 1977 to 1981 five parasitic wasps have been reared and released to combat the range caterpillar. *Brachymeria ovata*, a chalcid wasp, is a native parasitoid of the range caterpillar. The natural population of *B. ovata* is being supplemented with lab reared individuals. Two other closely related species, *Brachymeria lasus* and *Brachymeria intermedia* were imported from Japan and Germany respectively and are being used against the range caterpillar.

A large ichneumon wasp, *Coccygomimus disparis*, was originally imported to the United States for gypsy moth control and has proven to be a successful parasite of range caterpillar pupae. Finally an ichneumon wasp collected from range caterpillar pupae, *Itoplectis conquisitor*, is being reared to supplement the native population.

The most recent outbreak of range caterpillars peaked in the late 1970's. Since the range caterpillar programs initiation the population of range caterpillars has decreased. The programs objective now is to establish a large enough native population of parasitoids during the off peak period to keep the range caterpillar population from reaching an outbreak stage in the future. To accomplish this, fall releases of the five parasitoids were made in the rangeland near Branson, Colorado. The 1984 releases consisted of 7,500 *B. ovata*, 6,000 *B. lasus*, 2,250 *B. intermedia*, 4,125 *C. disparis* and 2,250 *I. conquisitor* totaling 22,125 parasitoids.

Aphid Parasite Program

Aphids are important pests of many agricultural crops in Colorado. The feeding habits of aphids reduce the vigor of the host plant and can greatly reduce crop productivity. Successful crop production is dependent on control of these important economic pests. Control of aphids is often accomplished by use of an insecticide or by various cultural practices. The loss of certain pesticides and resistance by the pests of others has made it necessary to investigate alternate methods for control.

The insectary has taken an active part in the development of biological control agents for these pests. In 1981, a small braconid wasp, *Ephedrus plagiator*, was received from the U.S.D.A. for mass production at the insectary. The following year *Aphidius ervi*, another parasitic wasp was acquired and put into production. Limited greenhouse and cultural space restricted the quantity of parasite production. By using rearing methods that have been previously refined, 19,550 male and female *E. plagiator* and 7,900 *A. ervi* were released for control of pea aphid, *Acyrthosiphon pisum*.

Production was timed for the first growth of alfalfa as that was determined to be the period of time when pea aphid was at the peak numbers in alfalfa. No releases were made on greenbug, *Schizaphis graminum* during 1984 because of the lack of sorghum production in the immediate area of the insectary.

Determination of the establishment of these parasites proved to be a difficult task. Pea aphid samples were collected from the various release sites and brought into the insectary for sorting and incubation. Samples were placed in cartons with alfalfa bouquets and observed until mummy formation occurred. From these samples it was determined that some reproduction had occurred in the field. Overwintering of *E. plagiator* will have to be determined from similar samples collected in 1985.

A similar rearing and release program for *E. plagiator* will be carried out next year with more samples taken to determine its effectiveness. It was determined that *A. ervi* occurs in the field in such large numbers that no further production of this parasite would be continued.

Alfalfa Weevil Parasite Program

Alfalfa weevil, *Hypera postica*, is a major insect pest of alfalfa in Colorado. Some control of this pest is usually necessary if successful hay production is to occur. Insecticide applications during the first growth of alfalfa is the general method used to control alfalfa weevil. This method of insect control reduces the numbers of beneficial insects and may cause outbreaks of other insect pests. Biological control, by using beneficial agents, is an alternate method of alfalfa weevil control.

Recent alfalfa weevil parasite surveys in Colorado have revealed the need for a pupal parasite to complete a complex of parasites that would attack every stage of the weevil. The insectary section was able to obtain a parasite, *Diabrachcoides dynastes*, from the U.S.D.A. for trial rearing during 1983. This parasite attacks both the prepupae and pupae of the weevil and is the only parasite in this complex to overwinter as the adult.

In anticipation of receiving this insect, rearing procedures for mass rearing alfalfa weevil as the host were initiated during the fall of 1982. Initially a bacterial disease greatly reduced the number of alfalfa weevil that were available for parasitization. Refinement of the rearing methods has produced a disease free weevil culture. Perpetuation of *D. dynastes* has been achieved since the arrival of the culture from Niles, Michigan in early 1983. Recent changes in the handling of the parasite to fit the facility has increased the numbers of insects that can be produced. It is anticipated, with the overall improvements of the rearing techniques, that *D. dynastes* can be successfully mass produced and released during the coming year.

U.S.D.A. Cooperative Alfalfa Weevil Program

Mass collection of *Bathyplectes stenostigma*, a larval parasite of alfalfa weevil, has been an ongoing cooperative agreement between the U.S.D.A. and the Colorado Department of Agriculture. This parasite is collected by sweeping alfalfa fields for retrieval of large numbers of alfalfa weevil larva. The larva are fed in paper bags until the parasite cocoons are formed. Each parasite cocoon is individually sorted from the debris and stored for shipment to Newark, Delaware where they are allowed to emerge. The adult parasites are then distributed to other areas in the United States for reestablishment. Colorado was selected for this project because of the high numbers of *B. stenostigma* that occur in the area surrounding the insectary.

Successful collection of *B. stenostigma* was again accomplished during the last year of this agreement. Results of these collections are summarized below:

County	Alfalfa Weevil Larvae Collected	No. *B.s.* Collected
Mesa	275,500	1,937
Garfield	290,700	4,922
TOTAL	566,200	6,859

Another important aspect of this agreement is the release of several other alfalfa weevil parasites that are not established in Colorado. These introduced parasites included; *Bathyplectes anurus, Microctonus aethiopodes,* and *Diabrachcoides dynastes*. These biological control agents were released in specific alfalfa fields in eastern Colorado where populations of alfalfa weevil were known to exist. Release of these parasites will occur again in 1985 with survey to determine establishment to occur the following year.

These same weevil parasites were also released in a leased insectary site in western Colorado. This site will be monitored over the next few years and when establishment occurs the parasites will be collected from this field and redistributed to other areas of the State.

Even though 1984 was the last year for mass collection of *Bathyplectes stenostigma* the cooperative agreement will be continued. Survey samples from insectary sites in Colorado and Oregon will be processed by the insectary section along with re-release of several important alfalfa weevil parasites.

Fall Webworm Program

The fall webworm, *Hyphantria cunea,* is a pest of over 200 ornamental and fruit trees. The larvae of the fall webworm are gregarious with individuals from one egg mass spinning a single web over the foliage, then extending the web to enclose additional foliage. In serious outbreak periods fall webworm larvae can defoliate trees resulting in reduced vigor and even death. Under normal conditions however, only a few branches are defoliated and the vigor of the tree is not noticably affected. The unsightly webs the fall webworm builds makes it a more serious urban than forest pest.

Under laboratory conditions the five parasitoids used in the range caterpillar program, *Brachymeria ovata, Brachymeria lasus, Brachymeria intermedia, Coccygomimus disparis* and *Itoplectis conquisitor* have successfully used fall webworm pupae as a host. In 1983 and 1984 releases of these five parasitoids were made in areas of Delta, Jefferson and Mesa Counties infested with fall

webworm. Surveys of fall webworm pupae will help determine if these parasitoids will be effective in helping to control fall webworm. Cumulative releases in 1984 were made as follows: 5,500 *B. ovata*, 5,000 *B. lasus*, 4,300 *B. intermedia*, 6,000 *C. disparis*, and 5,600 *I. conquisitor*.

Musk Thistle Predator Program

Musk thistle, *Carduus nutans*, is becoming an increasingly troublesome weed in Colorado. Musk thistle are large spiny biennial plants with tremendous reproductive potential. Because musk thistle is competitive in pasture and rangeland, and is becoming so widespread in Colorado, it is included on the State's noxious weed list.

Musk thistle seed weevil, *Rhinocyllus conicus*, was imported from Europe by the U.S.D.A. for tests as a bio-control agent. The weevil lay their eggs on the flower bracts and the larvae feed on developing musk thistle seeds within the receptable. Production of viable seeds by weevil infested thistle heads is greatly reduced. The Palisade insectary first received and released this thistle head-infesting weevil in 1974.

Since the original release of *R. conicus* in 1974, the insectary has endeavored to establish seed weevil in musk thistle sites throughout Colorado. This season, 15,000 *R. conicus* were collected in Mesa County. All seed weevil were released in uninfested thistle sites in Western Colorado. To date, over 200,000 musk thistle seed weevil have been collected in Colorado and redistributed to new thistle sites around the State.

Musk thistle seed weevil has successfully colonized most thistle sites around the State, and can be found established at nearly all previous release sites. *R. conicus* is very adaptable and has become established on musk thistle at elevations between 4,500 and 10,000 feet. The weevil are also quite mobile and have been found to move several miles from original release sites. Because *R. conicus* is well established in Colorado, it is becoming increasingly difficult to find new uninvested release sites. Musk thistle however, continues to spread to new areas of Colorado and further collection and release of *R. conicus* is planned for following seasons.

In 1983 the insectary received an additional predator to assist in control of musk thistle. One thousand *Trichosirocalus horridus* were acquired for release from Virginia. This European weevil is a promising addition for the bio-control of musk thistle and is compatible with *R. conicus*, as it does not compete for the same feeding site. While *R. conicus* feeds primarily on the flower parts, *T. horridus* attacks the crown of the thistle. *T. horridus* larvae feed on the crown tissues of thistle rosettes, lessening the vigor of the plant. They delay development of the thistle by killing the apical meristem and reduce the flowering potential of the plant.

T. horridus was recovered in June of 84 from one of two 1983 release sites in Mesa County. We are optimistic that this thistle feeding weevil will become

well established at these sites over a period of time. As the population of *T. horridus* increases, collections will be made for redistribution around the State.

Puncturevine Weevil Program

Puncturevine, *Tribulus terrestris*, is a native weed of the Mediterranean areas of Europe and Africa. In 1932 it was reported to have been accidentally introduced into the United States with livestock from the Mediterranean area. To combat this noxious weed, surveys in India, France, and Italy were conducted to find its natural enemies. Considered to be the most successful biological control agents were, *Microlarinus lareynii*, a seed feeding weevil, and *Microlarinus lypriformis*, a stem boaring weevil. These two weevil were imported into the U.S. in 1961 and released in Colorado and five other states. *M. lareynii* and *M. lypriformis* were not detected in Colorado again until 1977 when they were collected in Baca County. Since 1977 *M. lareynii* and *M. lypriformis* have been collected in Bent, Cheyenne, Crowley, Kiowa, Kit Carson, Otero, Powers and Pueblo Counties.

Fall collections and releases of *M. lareynii* and *M. lypriformis* have failed to establish detectable colonies on the western slope of Colorado. Adults of these weevil that emerge late in the season remain sexually immature until the next spring when the new puncturevine plants begin to sprout. Early collections of *M. lareynii* and *M. lypriformis* were made in 1984 and 1,225 adults were released in the Palisade area. These releases should help establish a population large enough that the weevil adults can successfully overwinter, locate a mate, and begin ovaposition next spring.

Microlarinus lareynii and *M. lypriformis* have not yet become established in the state of Missouri. In cooperation with the U.S.D.A. and Missouri State University, the insectary collected and shipped 1,000 *M. lareynii* and *M. lypriformis* and sent them to Missouri. These weevil have already been successful in surviving the cold winters in Colorado and may prove to be valuable in other states with similar winters.

II. NEW PROGRAMS

Toadflax Control Program

Yellow toadflax, *Linaria vulgaris* and dalmation toadflax, *Linaria dalmatica* are primary noxious weeds in Colorado. Both species of toadflax were imported from Europe as ornamental plants, but eventually escaped cultivation to become serious weed pests. Yellow and dalmation toadflax

are perenial plants that reproduce by seed and vegetatively by creeping rootstocks.

A predatory noctuid moth, *Calophasia lunula*, was observed feeding heavily on toadflax foliage in Germany. During the 1960's, *C. lunula* was collected and released in Canada. After establishing in Canada, the U.S.D.A. obtained a culture for screening and release in the United States. During the summer of 1983 the insectary received the first shipments of *C. lunula* for release and laboratory colonization. In 1984 4,350 larvae reared in the Palisade insectary were released. There was no evidence in 1984 that the *C. lunula* released the year before had overwintered. Caged releases were set up near Buford, Colorado to help determine if *C. lunula* will survive the winter. In the future the insectary staff plans to continue rearing *C. lunula* for control of yellow toadflax, and to establish colonies on dalmation toadflax.

Bull Thistle Predator Program

Bull thistle, *Cirsium vulgare*, is a lesser known thistle that is apparently present in many areas of Colorado. This thistle is a biennial as it produces a rosette with a deep toproot and large spiny leaves during the first year of growth. The mature plant is rather large, standing 2 to 5 feet high, with many bright purple, fragrant, solitary flowers on the ends of branches. This plant reproduces by seed and competes with native grasses in grazing areas.

The Palisade insectary has acquired a fly predator, *Urophora stylata* for control of bull thistle. Originally from Cloverdale, British Columbia, Canada, the insectary received it from the U.S.D.A. Weed Laboratory in Albany, California. The female of this predator lays its eggs in the seed heads of the thistle. The maggots then consume the seed producing area of the heads, effectively reducing seed production.

During August of 1984, the insectary received a total of 800 flies in three shipments. Four release sites were chosen in different areas of western Colorado. Two sites were located south of Collbran in Mesa County and one site each near Paonia in Delta County and Buford in Rio Blanco County. Egg deposition was noted at time of release and it is anticipated that establishment of this predator will occur. Follow-up surveys will be conducted next year to determine if overwintering was successful.

Tentiform Leafminer Parasite Program

Tentiform leafminer, *Phyllonorycter elmaella*, can be an important insect pest of apples. The larva of this small moth feeds between the leaf layers

and removes much of the chlorophyll from the leaves. This can cause reduced vigor of the tree along with poor fruit production. Populations of this fruit pest increase during the growing season as peak flights occur around harvest. Controlling tentiform leafminer can be a difficult problem as once the larva reaches the area between the leaf layers it becomes almost impossible to kill with a pesticide.

The insectary section has made attempts to biologically control this pest with the introduction of a small parasitic wasp, *Pholetesor pedias*. A total of 150 parasites were obtained from Guelph, Ontario, Canada and released at the Colorado State University Research Station on some unsprayed apple trees. Leafminer populations were low at the time the shipment arrived. Leaf samples containing leafminer larva will be collected in the fall when the population is at the highest level, to determine if this exotic parasite has become established.

III. DETECTION AND SURVEY

Fruit Insect Monitoring Program

The Colorado Department of Agriculture monitored the seasonal flight patterns of several fruit insect pests in Mesa County during 1984. Oriental fruit moth and peach twig borer were monitored again this season to facilitate the *Macrocentrus* program. Peach tree borer, another troublesome pest of peaches is trapped in the same orchard locations. In addition to these routine monitoring programs, the insectary cooperated with the Orchard Pest Exclusion Committee in trapping for apple maggot and Western cherry fruit fly in the Palisade area.

Grapholitha molesta, *Anarsia lineatella*:

Oriental fruit moth, *Grapholitha molesta*, and peach twig borer, *Anarsia lineatella*, are the most threatening insect pests to the Colorado peach crop. While the insectary-reared parasitoid, *Macrocentrus ancylivorus*, is an effective bio-control agent for Oriental fruit moth (OFM), properly timed insecticide applications are necessary to reduce peach twig borer (PTB) populations. Insecticides applied for PTB control can be detrimental to field-released *Macrocentrus*. Therefore, it is necessary to monitor the population levels of OFM and PTB to effectively integrate the control of both pests.

The insectary monitored the OFM and PTB flight patterns at eight locations within the Palisade and Orchard Mesa peach growing districts in 1984. Two OFM and two PTB Pherocon^{R} IC sticky traps were baited with the appropriate pheromones and placed in each orchard location. Pheromone baits were changed every five weeks to assure constant attraction of male moths to the traps. OFM and PTB traps were placed in peach orchards in early April and

early May respectively to ensure catch of first emerging moths.

The overwintering male OFM flight began in early April and reached a peak the middle of May. Greatest male moth activity for the first summer generation of OFM occurred during late-June. Peak flights of the second and third summer generations occurred in late-July and late-August respectively. As in previous years, four OFM generations were completed in the Palisade area. The relative number of OFM trapped was increased over 1983. The OFM population approached economic levels in four of the eight peach orchards monitored.

Adult emergence of peach twig borer began late-May with the greatest number of overwintering PTB caught the first week of June. The first summer generation of PTB reached peak adult activity the last week of July. Insecticides for PTB control were generally applied near peak emergence of these first two flights. Larvae of the first brood feed mainly on growing peach twigs while the second brood larvae may attack the fruit. The final PTB flight began in late-August and continued into September. This third generation of moths lay their eggs in cracks and rough places in the bark. These PTB eggs hatch and the young larvae excavate small cavities called hibernacula in which they spend the winter.

Synanthedon exitiosa:

Peachtree borer, *Synanthedon exitiosa*, is a very serious pest in the peach growing areas of Colorado. This sesiid moth lays its eggs around the base of the peach trees. The larva burrow into the bark of the trunk and feeds on the vascular system causing girdling and decline of the tree. A large infestation of peachtree borers can greatly reduce the productivity and longevity of a peach orchard and young trees may be killed in a single season.

The seasonal adult moth activity was monitored in the same eight commercial orchards in the Palisade fruit growing district. Monitoring was accomplished by use of traps constructed by suspending a glycerin filled plastic cup beneath a Pherocon^{R} IC trap lid. The pheromone bait was tethered above the glycerin from the trap lid.

Emergence of male peachtree borer moths began in early June and continued through September. High numbers of moths were caught over an extended period of time during 1984. In five of the eight trapping locations, 10 to 40 male moths per trap day were recorded for nearly three months. The long duration of moth activity and oviposition creates overlapping generations and makes control of this pest very difficult and expensive. Our trapping results reconfirm the need for close monitoring and two well timed insecticide applications for control of this pest.

Rhagoletis pomonella, *Rhagoletis indifferens*:

Two new orchard insect pests currently pose a serious threat to western Colorado's tree fruit industry. Apple maggot, *Rhagoletis pomonella* and Western cherry fruit fly, *Rhagoletis indifferens* have never been reported to exist in Colorado but do occur in Utah, northern California, Oregon and

Washington. The possible introduction of either fly into western Colorado from regions to the west is a real threat. For this reason, the Colorado Dept. of Agriculture cooperated with the Orchard Pest Exclusion Committee in an extensive trapping-monitoring effort. Traps were placed throughout the fruit growing regions of western Colorado and along the front range. The insectary's region of responsibility was the immediate Palisade area.

Traps, provided by the Colorado Apple Administrative Committee, were placed in nine unsprayed fruit tree locations in the Palisade area. Traps were visited bi-weekly and changed every two weeks to assure continued attraction to the traps. Although, some related species were trapped, no confirmed apple maggot or Western cherry fruit fly were found by the insectary or other cooperators around the State. The verified nonexistance of these two serious pests is very important to Colorado's fruit industry.

All insect monitoring information gathered in 1984 was provided to the Colorado Cooperative Pest Survey and Detection program. Similar insect monitoring programs are planned for next season.

Russian Thistle Predator Program

Coleophora klimeschiella, an imported predator of Russian thistle, *Salsola kali*, continues to spread from the original release site near the insectary at Palisade. This predator was acquired from the U.S.D.A. Biological Control of Weeds Laboratory at Albany, California in two shipments in 1981 and 1982. The larvae of this case-bearing moth feeds on the leaves of the thistle and reduces the vigor of the plants. If high enough numbers of the predator occur, seed production will be reduced and control of this important weed will take place. Continued monitoring of this predator will occur to determine spread and overwintering success.

IV. PROGRAM OBJECTIVES FOR 1985

All ongoing programs at the insectary will be continued during 1985. Two of the *Brachymeria* species will be discontinued to allow space for increased production of the toadflax predator. Rearing trials of fall webworm will be attempted along with its native parasites to determine if mass production is possible.

Survey for several noxious weeds will be conducted to determine their presence in Colorado. Several new weed predators are available from the U.S.D.A. if ample infestations of the weeds are located. This survey will be conducted for the following weeds; diffuse knapweed, spotted knapweed, yellow starthistle, bull thistle, leafy spurge and Dalmation toadflax. Surveys will also be conducted to determine establishment and dispersment of

all insects released in 1984.

The U.S.D.A. Cooperative Agreement for alfalfa weevil will be continued as field samples from both Colorado and Oregon will be processed by the insectary section. Also the insectary site in western Colorado will be monitored to determine establishment of newly released alfalfa weevil parasites.

It is anticipated that 1985 will be another busy year for the insectary. New biological control programs are continually being developed by state and federal agencies. It is extremely important for Colorado to keep abreast of the new programs if it is to receive these biological control agents.